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Relationship between religion and school students' road behavior in southern Iran

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ABSTRACT

Purpose: Unsafe behaviors are an important cause of accidents in adolescent age groups. This study was designed to examine the behaviors of adolescent pedestrians in southern Iran.

Methods: This is a descriptive analytical cross-sectional study. The study population consisted of high school students in Shiraz, capital city of Fars Province, Iran. Five hundred and sixteen students were selected by multi-stage sampling. Data were collected by the use of three questionnaires, which included Persian copies of adolescent road user behavior questionnaire (ARBQ), Duke University Religious Index (DUREL), as well as the context and independent variables questionnaire.

Results: The results showed that a decrease in dangerous behaviors on the road resulted in an increase in respondents' intrinsic religiosity. Also, engagement in unsafe crossing behavior in the road decreased with increasing respondents' intrinsic religiosity. Another finding showed that female students were less involved in dangerous play and planned protective behaviors on the road.

Conclusion: Findings clearly indicate that intrinsic religiosity has a significant role in reducing the risky road behaviors of students. Hence, religion may improve road safety in school students' road behavior in Iran.

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Introduction

A large part of the 1.2 million people who were killed by road traffic accidents in the world, as well as others who have been injured or disabled are teenagers.^{1,2} Based on the report of the World Health Organization, road traffic injuries are considered as the second leading cause of death among 10–14 year old teenagers and the first leading cause of death among young people aged 15–19 years.² Majority of these deaths and injuries occur in medium and low income countries.³ In addition, studies conducted in different regions of Iran showed that young people and teenagers, especially pedestrians, are one of the risk groups to traffic accidents and its attendant consequences including death.^{4–6}

Many of these accidents happen when teenagers are crossing the road.⁷ A wide range of factors are involved such as human, technical and environmental factors. Among these factors, the human factor is the main factor (about 80%–90% of cases).^{8–10} The most important human factor related to the behaviors exhibited by teenagers on the road can include playing on the road which is dangerous, unsafe crossing behavior and planned protective behavior. These factors in this age group can lead to road accidents.¹¹

Nowadays, the unsafe behavior and behavioral disorders are a problem in society. For example, Heinrich reported unsafe behaviors as the cause of approximate 88% of total accidents.¹²

Studies in various countries have shown that adolescents with different demographic and psychological characteristics exhibit different types of behavior on the road which could expose them to the risk of traffic accidents, injuries and ultimately death. On the other hand, the variety of individuals' protective behaviors could safeguard teenagers in these age groups from accidents.^{13–16}

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Many factors play a role in the occurrence of these behaviors, one of which is religion.¹⁷ Different studies have investigated the effect of religiosity as an important factor with: suicide, depression, addiction, crime, divorce, achievement, hospitalizations, and pedestrian behavior.^{17–19} In addition, studies conducted in some countries showed that religion plays an important role in decreasing health related risk behaviors.^{11,20} Research in Greece showed that religion and accident involvement among adolescent drivers were related.²¹ Another study in Greece found that non-religious drivers have more violations such as ignoring red lights.²² Also, Turkish research found that the behavior of drivers and pedestrians are under the positive influence of intrinsic religiosity, while extrinsic religiosity was associated with reducing the frequency of violations.¹⁷ In a study of Iranian adolescents by Nabipour et al, it was found that religion is positively related with on-road behavior among road users.¹¹

An understanding of these behaviors by decision-makers and implementers of traffic field is important; therefore, an efficient and effective tool in this context is the adolescent road user behavior questionnaire (ARBQ), which was developed by Elliott and Baughan in the UK.¹³ Studies by other researchers in different countries such as the UK,¹³ New Zealand,¹⁵ Belgium,¹⁶ Spain,¹⁴ and Iran¹¹ were validated. Previous studies showed that engagement in planned protective behavior (one of the three dimensions ARBQ) decreased with age. Engaging in dangerous play (another dimension) on the road was higher among men than women.^{11,13–16} Planned protective behaviors found females less often engaging in this dimension of ARBQ in a study conducted in Iran. Furthermore, adolescents with accident history were reported to have engaged more in unsafe crossing behavior and dangerous playing in the road.¹¹ A UK research showed that dangerous crossing behavior was more common in small areas (rural) than larger areas.¹³

Nabipour et al's research is the only study which has been conducted among high school students in Iran's center. It is obvious that the participants in this study were not representatives of all Iranian adolescents.¹¹ Consequently, the present study was designed to examine the behaviors of adolescent road users based on the factors of ARBQ in Shiraz, southern Iran. In addition, Shiraz is the third largest religious city in Iran, and Muslims must obey rules and regulations in the society. Therefore, in another section of this research, this tool was used to investigate the relationship between adolescent road user behaviors with dimensions of religiosity on high school students' behavior on the road in Shiraz, capital city of Fars Province, Iran.

Materials and methods

This research is a descriptive analytical cross-sectional study. The study population in this research consisted of high school students in Shiraz, Iran. Shiraz is the sixth most populous city in Iran and the capital of Fars Province. It has a human population of 1,500,644. It is located in the southwest of Iran, and has a moderate climate and a seasonal river. They were selected from different high schools in the city by multi-stage sampling. Shiraz was divided into 3 municipal districts based on socioeconomic status. A high school was chosen randomly from each municipal district for boys and girls. By using random method, one class for each year of entrance was selected as a cluster. Finally, based on the list of students selected, 30 persons per class were randomly selected to answer the items on the questionnaires. A total of 550 questionnaires were distributed among the students, 516 students completed and participated in the study. Researchers had explained to the participants the need for this research before data were collected. In addition, participants were informed by researchers that

participation in the study was voluntary and that their answers to questionnaires would be kept confidential. Students declared their verbal agreement for the study before completing the questionnaire. In the absence of consent to participate in the study, another person was randomly assigned for this purpose. Given that the questionnaire was on the study of religion, Muslim students were used. Non-Muslim students were excluded from this study. Data were obtained by the use of three questionnaires which included Persian copies ARBQ, Duke University Religious Index (DUREL) questionnaire, and the context and independent variables questionnaire.

In summary, the ARBQ questionnaire as an instrument for assessing the road user behavior of adolescent age groups in England was invented in 2004 by Elliott and Baughan.¹³ Sullman et al applied this questionnaire in the countries of New Zealand, Spain and Belgium.^{14–16} In this study, a Persian version of ARBQ which consisted of 21 items was used. Its validity and reliability had already been approved by Nabipour et al.²³ This questionnaire assessed the on-road behavior of adolescents in three dimensions: dangerous play on the road including 8 items, in which two examples of items in this dimension are (1) holding on to a moving vehicle when riding a bike, and (2) play “chicken” by lying down on the road and waiting for cars to come along; planned protective behavior containing 5 items, in which two examples of items in this dimension are wearing bright or reflective clothing when riding a bike in the dark, and wearing reflective clothing when out on foot in the dark; and unsafe road crossing behavior containing 8 items, in which two examples of items in this dimension are (1) failure to look properly because of thinking about something else, and (2) failure to look properly because of conversation with friends. The Cronbach's alpha coefficients for the three dimensions of ARBQ were 0.85 for engaging in dangerous play on the road, 0.75 for planned protective behavior and 0.61 for unsafe road crossing behavior, with an overall scale coefficient of 0.74. Each item in this questionnaire had a general item, which was “How often do you exhibit this behavior?” To answer the items, there were 5 choices including never, rarely, sometimes, often and almost always. The score of each item ranged from 1 to 5. For the dimensions, dangerous play on the road and unsafe road crossing behavior had the lowest and highest scores, which were considered to be 1 and 5, respectively. In the planned protective behavior with respect to a positive outcome, the scores of these behaviors were reversed (i.e. 1 was converted to 5 in this way until the end) to make it consistent with two other dimensions.

The Duke University Religion questionnaire was designed by Koenig et al for scientific studies in 1997.²⁴ This questionnaire is also available in English, Spanish, Portuguese, Chinese, Japanese, Thai, Romanian, German, Norwegian, Dutch, Danish and Arabic and has a very wide application in epidemiological studies related to religion.²⁵

In the present study, the use of the Persian version of DUREL because of its reliability and validity was approved by Safari et al in Iran, 2013.²⁶ This questionnaire was used for some studies in Iran.^{11,27} It included 5 items, which are items related to non-organizational religious activities (including private religious activities such as praying, studying religious texts as well as watching and listening to religious programs on television and radio), and other organizational religious activities (including public religious activities such as attending religious institutions such as mosques, Hosseinieh or other religious activities like congregational prayers and studying religious texts such as Quran), and the last three items were related to intrinsic religiosity. The final three items of intrinsic religiosity were extracted from Dean Hoge's 10-item Intrinsic Religiosity (IR) Scale.²⁸ Intrinsic Religiosity is associated to the degree of individual religious commitment and is measured based on

three items, namely: “I experience the presence of God in my life”, “My religious beliefs are what really lie behind my whole approach to life” and “I try hard to carry my religion into all other dealings in life”.¹¹

The DUREL questionnaire scores, containing three dimensions: organizational religious activity (ORA), non-organizational religious activity (NORA), and intrinsic religiosity (IR), vary between 5 and 27. Two primary items and three items at the end including 6 and 5 options, respectively, were based on number options where the scores belong. The reliability and validity of the DUREL has been proved in Iran¹¹; the interclass correlation coefficients were 0.96 for ORA, 0.99 for NORA, and 0.97 for IR dimensions. The Cronbach's alpha of the total DUREL scale was 0.737.¹¹

The context and independent variables questionnaire contained 13 items. Ten items were about the context variables (including gender, age, grade, average score, father's education level, mother's education level, father's job, mother's job, living area, family having motorized vehicle) and 3 items were on independent variables including death or injury of a relative or friend in a traffic accident, traffic accident history, respectively.

Since all selected schools carry out their learning activities in the morning, to fill the questionnaires, the questionnaires were distributed to schools between the hours of 8.30–11.30. After liaising with the head master and the classroom teachers, questionnaires were distributed among students. The questionnaires were collected after 30–40 min to ensure that all students respond to the items.

Statistical analysis

Data analyses were carried out using descriptive statistics of frequency, mean, standard deviation as well as inferential statistics such as multivariate linear regression with 95% confidence intervals (CIs). The significance level for all statistical tests was considered at p value <0.05. Version 21 of the software SPSS was used for data analysis. To estimate the missing data, multiple imputation method was used. The use of multivariate linear regression in three models, and initially identified the influential observations were excluded from the data.

Results

In order to ensure easy comparison with other ARBQ sectors, before performing data analysis, the scores of all the items were reversed including the planned protective behavior part. The response rate in our study was 93.5% (516/550) of the selected students completed the questionnaire). The demographic characteristics of participants are shown in Table 1. The most of the respondents were male in the age group of 14–15 years, in the first year of high school, and were municipal district 2 residents with percent frequency of 52.9%, 69.2%, 40.9%, and 52.9%, respectively. Most of the respondents' fathers were educated to university level (54.8%) and are employees (43.6%). According to these variables, most of the mothers were educated to university level (45.3%) with householder's job (67.1%). About 53% of the students have had a history of traffic accidents throughout their life. However, more than half of the students reported that they had friends and relations who were injured or killed by traffic accidents. The most respondents' families (94%) reported at least one type of motorized vehicle (such as motorcycle, car, truck).

The results of regression analysis showed that a decrease in dangerous play on the road resulted in an increase in respondent's IR ($p = 0.049$, Table 2). This type of behavior was lower in females compared to males ($p < 0.001$) and the respondents' education level was second year in high school. At this education level, it was

Table 1
Characteristics of respondents.

Characteristics	<i>n</i> (%)	Mean (SD)
Age (year)		16.09 (1.05)
14–15	357 (69.2)	
16–19	159 (30.8)	
Gender		
Male	273 (52.9)	
Female	243 (47.1)	
Respondent's education level		
The first year of high school	211 (40.9)	
The secondary year of high school	118 (22.9)	
The third year of high school	178 (34.5)	
Per-university	9 (1.7)	
Average scores of participants	–	18.00 (1.78)
>17	394 (76.4)	
10–16	122 (23.6)	
Father's education level		
University	234 (45.3)	
High school	205 (39.7)	
Secondary school	46 (8.9)	
Elementary & illiterate	31 (6.0)	
Father's job		
Employee	225 (43.6)	
Free	196 (38.0)	
Other	95 (18.4)	
Mother's job		
Householder	346 (67.1)	
Employee	115 (22.3)	
Other	55 (10.7)	
Living area		
Municipal district 1	150 (29.1)	
Municipal district 2	273 (52.9)	
Municipal district 3	93 (18.0)	
Traffic accident history		
Yes	485 (94)	
No	31 (6.0)	
Religiosity		
ORA ^a	–	3.21 (1.43)
NORA ^b	–	3.70 (1.59)
IR ^c	–	11.84 (2.47)
Dangerous playing in the road	–	9.80 (2.93)
Planned protective behavior (reversed)	–	16.90 (6.56)
Unsafe crossing behavior	–	18.11 (5.22)

^a Organizational religious activity.

^b Non-organizational religious activity.

^c Intrinsic religiosity.

reported that dangerous play on the road was lower compared to the education level of those in the first year of high school ($p = 0.013$). Also, the findings showed that the average education score of students significantly led to an increase in dangerous play on the road ($p < 0.001$).

Table 2 shows that in terms of planned protective behaviors, greater levels of the average scores of students were related with more planned protection ($p = 0.002$). Females had significantly lower planned protective behaviors than males ($p < 0.001$). Students in the age group of 14–15 years often had more statistically significant protective behavior than those in the age bracket of 16–19 years ($p = 0.003$). Participants living in municipal districts 3 and 1 stated that the execution of planned protective behaviors was significantly lower than those of participants from municipal district 2 ($p < 0.001$).

Lastly, Table 2 shows that involvement in unsafe crossing behaviors on the road tend to decrease with increasing respondents in IR ($p < 0.001$). Students who did not have traffic accident history based on unsafe crossing behavior on the road were significantly lower ($p = 0.008$). The average scores of the students were negatively associated with unsafe crossing behavior ($p = 0.035$), but in terms of unsafe crossing behaviors, respondents with higher education levels were associated directly with more unsafe crossing

Table 2
Results of multivariate analysis (liner regression) based on demographic and religiosity variables in students on road behaviors.

Variables	Dangerous playing in the road			Planned protective behavior (reversed)			Unsafe crossing behavior			
	Beta	95% CI	p value	Beta	95% CI	p value	Beta	95% CI	p value	
Constant	17.40	13.94 to 20.86	<0.001*	22.02	16.04 to 28.00	<0.001*	31.18	25.13 to 37.23	<0.001*	
Gender										
	Male	Ref								
	Female	-1.48	-2.11 to -0.85	<0.001*	2.85	1.77 to 3.93	<0.001*	-1.14	-2.24 to -0.04	0.41
Age										
	16–19	Ref								
	14–15	0.39	-0.19 to 0.98	0.191	-1.56	-2.59 to -0.54	0.003*	-0.08	-1.12 to 0.94	0.87
Respondent's education level										
	The first year of high school	Ref								
	The secondary year of high school	-0.98	-1.75 to -0.20	0.013*	-0.44	-1.78 to 0.89	0.514	-0.99	-2.34 to 0.35	0.148
	The third year of high school	0.24	-0.45 to 0.93	0.499	-1.17	-2.37 to 0.03	0.056	1.16	-0.05 to 2.38	0.061
	Per-university	-0.94	-2.96 to 1.07	0.358	0.81	-2.67 to 4.30	0.646	4.94	1.42 to 8.47	0.006*
Average scores of participants										
Living area										
	Municipal district 2	Ref								
	Municipal district 1	0.28	-0.33 to 0.89	0.367	7.20	6.14 to 8.27	<0.001*	0.51	-0.56 to 1.58	0.348
	Municipal district 3	-1.26	-2.33 to -0.19	0.021*	6.13	4.27 to 7.98	<0.001*	-2.64	-4.51 to -0.77	0.006*
Father's job										
	Employee	Ref								
	Free	0.49	-0.19 to 1.17	0.158	0.48	-0.69 to 1.67	0.417	-0.45	-1.64 to 0.74	0.457
	Other	0.40	-0.32 to 1.12	0.275	1.59	0.34 to 2.84	0.012*	-1.31	-2.57 to -0.05	0.041*
Mother's job										
	Householder	Ref								
	Employee	-0.12	-0.88 to 0.64	0.751	-0.21	-1.53 to 1.10	0.746	-1.34	-2.67 to -0.01	0.049*
	Other	-0.10	-0.96 to 0.76	0.815	0.82	-2.32 to 0.67	0.277	-0.99	-2.51 to 0.51	0.196
Father's education level										
	University	Ref								
	High school	-0.19	-0.92 to 0.54	0.611	0.60	-0.66 to 1.88	0.349	0.62	-0.66 to 1.91	0.342
	Secondary school	-0.28	-1.52 to 0.94	0.645	0.43	-1.71 to 2.57	0.688	1.09	-1.07 to 3.25	0.321
	Elementary & illiterate	-0.17	-1.77 to 1.41	0.825	0.79	-1.95 to 3.55	0.571	1.26	-1.51 to 4.05	0.371
Mother's education level										
	University	Ref								
	High school	0.34	-0.38 to 1.07	0.354	0.18	-1.08 to 1.44	0.780	-0.69	-1.97 to 0.58	0.286
	Secondary school	0.01	-1.14 to 1.15	0.994	0.22	-1.75 to 2.21	0.820	-1.28	-3.28 to 0.72	0.209
	Elementary & illiterate	-0.16	-1.54 to 1.21	0.810	-1.98	-4.36 to 0.39	0.101	0.03	-2.37 to 2.44	0.975
Traffic accident history										
	Yes	Ref								
	No	-0.41	-0.93 to 0.10	0.121	0.26	-0.63 to 1.16	0.562	-1.23	-2.14 to -0.32	0.008*
Friends or relatives died in traffic accidents										
	Yes	Ref								
	No	-0.07	-0.61 to 0.45	0.754	0.06	-1.02 to 1.14	0.912	0.68	-0.40 to 1.78	0.216
Friends or relatives injured in traffic accidents										
	Yes	Ref								
	No	0.10	-0.52 to 0.72	0.754	0.06	-1.02 to 1.14	0.912	0.68	-0.40 to 1.78	0.216
Family have motorized vehicle										
	Yes	Ref								
	No	1.06	-0.01 to 2.15	0.054	-0.64	-2.52 to 1.23	0.500	0.93	-0.96 to 2.83	0.335
Religiosity										
	ORA	0.02	-0.21 to 0.25	0.852	-0.23	-0.64 to 0.17	0.262	0.06	-0.35 to 0.47	0.759
	NORA	-0.01	-0.21 to 0.18	0.881	0.01	-0.33 to 0.36	0.924	-0.05	-0.40 to 0.30	0.766
	IR	-0.12	-0.25 to -2.53	0.049*	0.04	-0.17 to 0.26	0.686	-0.36	-0.58 to -0.14	<0.001*
	R ²	0.067			0.442			0.099		

Note: Lower mean scores reflect a more frequent engagement in planned protective behavior.

*Significant at the 0.05 level.

behaviors ($p = 0.006$). Students whose fathers' and mothers' jobs were others and employee respectively, engaged in significantly lesser unsafe crossing behavior ($p = 0.041$ and $p = 0.049$).

Discussion

A similar study was conducted in Tehran, Iran.¹¹ Given the significant role of religion in reducing the risky road behaviors of adolescents, the present study investigated this matter in Shiraz, which has one of the highest rates of roadside accidents in the country. Generally, this study showed that religion has a positive influence on students' road behavior. This study showed that there is a negative correlation between IR and dangerous play as well as unsafe road crossing behavior, which was a new finding compared to previous studies. In support of our result, Iranian¹¹ and Turkish¹⁷ studies have shown that religiosity have an effect on obedience to traffic rules among road users. There are several possible explanations for these findings; people who have religious beliefs are more concerned with their body and mental health, religious beliefs creates legal and lawful commitments such as paying more attention to the law and respecting the rights of others. Therefore, internalized religious beliefs can have an effect on different parts of

life, particularly in reducing dangerous play and unsafe road crossing behavior.²⁴

Based on the results of the present study, some demographic characteristics were associated with three study variables (three ARBQ factors). Our study was similar to other studies in which an increase in age decreased engagement in planned protective behavior.^{11,13–15} The explanation for this finding may be that an increase in age reduces parental supervision and increases independence from parents.^{29,30} In 1997, a study by Arnett et al showed that sensational behavior results in an increase in risky behaviors.^{31,32} So, for fun, overconfidence, and show off increases in older students thus leading to a reduction in risk perceptions.

Another finding showed that female students were less involved in dangerous play and exhibited protective behaviors on the road, which is consistent with previous studies.^{11,13–16} As expected, it appears that dangerous play is quite natural and due to differences in the characteristics of people, females are generally peaceful, cautious, patient, conventional, and they have a higher propensity to obey traffic rules than males.²³

The findings on planned protective behaviors were similar to previous Iranian studies, but studies from western countries showed no significant statistical difference between genders.^{13–16}

This difference between Iranian and foreign countries is perhaps due to the religious and cultural status they have attained. For example, in Iran the majority of women wear long dark dresses including Chador, so they cannot be flexible in planned protective behaviors on the road. On the other hand, they do not usually use bright clothes and helmet when they are walking or riding a motorcycle or bike.¹¹

Just a few of the traffic accidents' history was significant with unsafe crossing behavior based on our findings. However, the findings were consistent with previous research, in which students who have had a history of traffic accident were reported to engage more frequently in unsafe crossing behavior and dangerous play on the road.¹¹ To justify these claims, these behaviors were attributed to cultural poverty among adults of the families of students with a history of accidents. In addition, lack of proper education of students on road safety was also adduced to be responsible for these behaviors.

Existing evidence from developed countries indicates that educational activities can lead to social development and empowerment strategies for individuals, and social dimension, which can prevent road accidents. Therefore, for intervention in these groups, schools are the best place to educate students on safe road behavior and traffic rules.^{11,33}

The present study also found that the average score of participants had a negative relationship with engagement in unsafe crossing behavior and dangerous play on the road while it had a positive relationship with engagement in planned protective behavior, which seems to be another novel finding. The explanation for this finding can be adduced to the fact that students who are intelligent usually exhibit more cautious, safe and protective behaviors.

One of the variables that can predict students' planned protective behavior is the living area of the students. This is consistent with another research carried out among these age groups which have less parental supervision.¹³ Therefore, to justify this difference, it was opined that the dissimilarity in environmental conditions such as the abundance and lack of resources in municipal districts 1 and 3 provides conditions that cause unplanned protective behavior in students.³⁴

This study had some limitations. One of such is that we did not collect data on factors such as peer pressure and parental or guardian monitoring. Another limitation was the questionnaire, in which students were not asked whether there was any high risk behavior in their family. This study was based on students' answers to items bordering on road traffic behaviors. So, the results of this study may not generalize to the population of adolescents in Shiraz. Since other sources of data were not used to evaluate responses, it is imperative that the findings should be applied with more attention to detail. In the present study, measures were taken to decrease this bias as much as possible, so that respondents do not earn profit for the manner and type of responses given by the participants. Participants were also guaranteed complete confidentiality of their information. In addition, participants were informed that the essential section requiring their names was absent from the questionnaire.

In conclusion, this study clearly indicates that intrinsic religiosity has a significant role in reducing the risky road behavior of students in Shiraz. There should be collaboration and coordination between different sectors of organizations including the department of education to teach religious authorities, traffic directorates, and preachers in order to facilitate emphasis on subjects associated with safe road behavior. Also, traffic educational programs integrated with religious subjects can be conducted for at-risk groups like male students. Therefore, this method can be used to raise consciousness, as well as alter the behavior and attitudes of teenagers to inculcate appropriate road behaviors in them.

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