

The Effect of Firearms in Inducing Stress in High School Students in the City of Düzce (Turkey)

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Abstract

Objective: This study aimed to examine the behaviors of high school students exposed to firearms and firearms-related violence, which they had perpetrated or witnessed, and whether or not these events were related to stress.

Method: The study was conducted in Düzce province, which is characterised by the widespread use of firearms. A questionnaire was prepared to ascertain students' attitudes and behaviors towards owning firearms, their thoughts about firearms-related violence, and whether or not they had been a victim or witness to firearms-related violence. After a stress level scale was added to the questionnaire, it was administered to 791 students randomly chosen from the 8304 students that were attending all high schools in Düzce. The results were evaluated with using SPSS v.11.0 software.

Results: The level of stress in students that had contact with firearms, whether or not they were faced with a violent act, may be reached the adaptation difficulty level. Aggressive behaviors like hectoring occurred between coequal groups and brothers/sisters, affected stress levels. Exposure to and witnessing violent acts had important roles on level of stress. Gender, income level, and lack of a private room at home for adolescents affected stress levels. Contrary to expectations, the presence of firearms at home or in their surroundings did not have an effect on stress levels. Hearing the sound of gunfire was one of the most important factors related to stress levels.

Conclusion: Because of its ability to induce stress in adolescents, they must be protected from exposure firearms and their use, which is widespread in Düzce.

Key words: Adolescence, firearms, stress.

INTRODUCTION

Violence has been recently increasing in an ever-growing way on the social and individual levels. The individual armament that is the extreme point of violence appears to be a crucial security and right to live issue. It is estimated that there are 2.5 millions licensed guns, and approximately 3 times more 8-10 millions individual guns in Turkey (Umut Vakfi, 2008). Studies conducted in Turkey indicated that 66% -75.6% of the firearms in Turkey are unlicensed (Balcioğlu, 2006). One study investigated cases of murder in Turkey and reported that

4 times as many cases involved unlicensed guns versus licensed guns (Özdeş, 2003, Balcioğlu, 2006).

People living in the Black Sea region of Turkey are interested in guns because of traditional and geographical reasons. Although it was indicated that people who were born in the Black Sea region were in the front rank in the applications for licensed gun use, the unlicensed gun use was also widespread (Balcioğlu, 2006). According to Düzce Province Police Department data for November 2008, there were 2702 licensed guns in the police area, and 8346 grooved and ungrooved licensed shotguns. Be-

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tween 2004 and 2008, of the 367 violent events involving firearms in the police region, 69 involved licensed guns, and 297 involved unlicensed guns (Emniyet Müdürlüğü, 2009). It is estimated that these numbers are much more higher in the gendarme region.

The proliferation of individual armament increases the negative events committed by firearms. The Düzce Governor's ship web page, reports that during feasts, circumcisions, and wedding ceremonies, the firing of gun into the air is very common in some residential districts. These events cause fear and panic in the general population, resulting in physical injury and sometimes death (Düzce Valiliği, 2008). As a result of events committed by firearms, low-density trauma expressed by fear and panic appears as a stress factor. When stress exceeds an individual's endurance or decreases one's endurance over time and overwhelms, the defense and coping mechanism may be insufficient (Öztürk, 2004).

Rosenthal and Wilson (2003) defined frequent low-density violent activity as chronic social violence, and pointed out the differentiation between being a victim of violence and witnessing violence (Rosenthal and Wilson, 2003).

A great number of physiological and biological models have attempted to explain the phenomena of traumatic stress (Heim et al., 1998; Marshall and Garakani, 2002; National Research Council, 2006; Zhang et al., 2006; Girdler and Klatzkin, 2007). Several theories posit that being a victim of extreme violence yield important results in terms of post-traumatic stress, but also frequently confronting less violent events increased negative effect causing stress (Compas, 1987; Garbarino et al. 2002). Root (1992) defined minor, but cumulative events as insidious traumas. Other researchers report that psychological symptoms; such as anger, anxiety, depression, and dissociation tended to occur in response to trauma, and can be considered as general psychological reactions caused by traumatic stress (Ward et al., 2001; Waaktaar et al., 2004). The most serious result of these reactions is suicide, and studies show that among the factors related to suicide are some that lead to stress (Pfeffer 2001; Rosenthal and Wilson, 2003; Aktepe et al., 2005). In a study conducted with adolescent females, it was reported that the level of stress was higher those that attempted suicide (Bilgin et al., 2007).

Adolescence is a period characterized by rapid progress and important physical, psychological, and social change. The rapid biological and psychological changes during adolescence affects and urges the child.

During this period an individual's tendency to commit crime and exhibit socially inappropriate behaviors increases (Molitch, 1993; Montesero et al., 1996, Polat, 2004).

Very little is known about psychological symptoms caused by chronic exposure to violence during adolescence (Rosenthal and Wilson, 2003). Nowadays, the causes of death among adolescents most frequently seen in developed countries have shifted from the physical illnesses to psychosocial and environmental causes (Bül-bül, 2004).

Previously, suicide was in the front rank among the causes of death among adolescents in the USA and Turkey, and suicide via firearms was a frequently used method (Dolins and Christoffel, 1994; Grossman et al., 1999; Oner et al., 2007). It was suggested that easy access to firearms was one of the reasons for the increase in violence committed with firearms, 84% of people who committed or attempted suicide had kept a gun in their home (Grossman et al., 1999). Carrying a firearm increases the risk of being involved in violence with firearms both in terms of the carrier and other people (Webster, 1993; Dolins and Christoffel, 1994). Among 36 countries, it was reported that the USA had the highest rate of murder and suicide at young age, and that about 20 % of young Americans carry guns (Webster, 1993; Kahn et al., 2001). This might be the reason to commit suicide more with firearms during adolescence as well (Grossman et al., 1999; Peterson et al., 1985).

It was reported that most previous studies have focused on post-traumatic stress and depression after violence or dealt with stress in general terms, and that he spesific factors that might cause stress were overlooked (Deardroff et al., 2003). Although some studies addressed firearms along with other stress - inducing factors, to the best of our knowledge there are no studies that focused on the presence of firearms in the home or environment, and on being involved or witnessing a violent event with firearms as a stress-inducing factor for adolescents.

The present study attempted to emphasize that the damage caused by firearms in young people was not only the physical damage resulting in the injury or death of victims, and psychological damage that emerged as a result of the physical damage. This study aimed to determine if contact with firearms in daily life or witnessing a violent event with firearms was a stress-inducing factor in adolescents, and to discuss the precautions that can be taken for this situation.

MATERIALS AND METHOD

A. Sample

This study used a descriptive, cross-sectional design. A questionnaire was prepared and administered to 791 high school students (grades 9-11) randomly chosen from among 8304 students in Düzce Province, where the use of firearms is widespread. The participants were first given a informed consent form and then the questionnaire. They were instructed not to divulge their identities and to complete the questionnaire within 60 minutes. In all, 17 questionnaires were excluded from the study because they were fully completed.

B.1. Data collection materials

The questionnaire included 51 parameters and control questions concerning student age, gender, grade, basic demographic data such as socioeconomic and socio-cultural characteristics, attitudes and behaviors towards owning firearms, thoughts about violence with firearms, and questions about whether or not they had directly faced or been a witness to violent acts with firearms.

B.2. Stress level scale (SLS)

The Stress Level Scale (adapted for 15-19-year-olds) developed by Leighton that Baltaş translated and conducted its validity, reliability and norm studies (Turkish English form correlation: 0,88 and English Turkish form correlation: 0,87, test-retest test scores: 0,813, SLS and the Eysenck Personality Questionnaire Form A scores correlations: 0,74, SLS and correlation between SLS and asking for psychological help: 0,778) was added (Leighton, 1972; Baltaş, 2003). The scale's original structure is not suitable for individual diagnosis, but it is an instrument that measures stress level in school aged group, investigates the tendency to pathology in terms of preventive mental health, and aims to evaluate psychosocial stress.

This model assumes that a score of 20 indicates the self-perception of living in a minimum stress environment. A person is considered to be within the normal limits when he/she gets 1 point for each item while getting a 1 points' worth of stress load for about half of the items. On the other hand, 2 points' worth of stress load for 75% of the items indicates difficulty adapting. People who have a score above 35 are in this group. Thus, the stress level score of 36 or above points to the group that has adaptation difficulty (Leighton, 1972; Baltaş, 2003). In accordance with the model, stress levels were evaluated between 20 and 50.

The following categorization was used: 20-29: normal; 30-35: borderline; 36 and above: stress level as clinically significant adaptation difficulty. Items were answered as yes/no or on a Likert-type scale. The study included multiple-choice items instead of an interview, based on reports that the multiple choice method was more appropriate for evaluating a large sample, as it inexpensive and easy to administer (Duggal et al., 2000).

International resources were made use of (Kahn, 2001) in the process of developing the questions, and those questions that were found to be convenient to Turkey's conditions were added.

Statistical Analysis

Non-parametric values and chi-square analysis were used to determine the differences between contact with firearms and other factors that might have an effect on inducing stress and stress levels, and to evaluate statistical differences between the groups. All the factors in Tables 1 and 2 that might influence stress levels were analyzed, and except those who were defined in Table 5 were not included in the modeling because of their lowest effect level (Table 1,2,5). The evaluation of the modeling used to determine the effective factor was conducted using the logistic model in the curve estimation regression analysis. SPSS v.14.0 was used for all analyses.

RESULTS

General Results

Of the 791 students that were administered the questionnaire, 774 (97.85%) students that fully completed the questionnaire, including the stress test and providing their age, gender, and grade, were included in the study. Except for these 4 parameters, the study didn't exclude any form because of incomplete answers, and all of the completed forms were used. The students were all from the Black Sea Region. Mean age of the 317 (41%) females and 457 (59%) males was 16.14 years (medium: 16.00 years; range: 14-20 years); the mean age of the females was 16.01 years versus 16.23 years for the males. The students' demographic data are presented in Table 1.

When the cases are examined in terms of the class distributions; it was found that there was no interclass difference in the demographic data except age, and the difference observed in the question "did you injure anybody with a gun?" resulted from upper classes ($P < 0.05$). There was not an interclass difference in the answers given to the other questions.

TABLE 1. Demographic characteristics.

		Number	%
Age (years) n = 774	14	25	3,2
	15	227	29,3
	16	235	30,4
	17	208	26,9
	18	59	7,6
	19	20	2,6
Gender n = 774	K	317	41
	E	457	59
Grade n = 774	Preparatory	18	2,3
	9	384	49,6
	10	305	39,4
	11	67	8,7
Perceived income level n = 769	Low	148	19,2
	Medium	381	49,5
	Good	224	29,1
	Very Good	16	2,1
Is the father working? n = 761	Yes	521	68,5
Is the mother working? n = 761	Yes	103	13,5
Are the parents living together? n = 724	Yes	656	90,6
Father's education level n = 765	Illiterate	15	2,0
	Primary school	348	45,5
	Secondary school	164	21,4
	High school	147	19,2
	University	91	11,9
	No literacy	101	13,2
Mother's education level n = 765	Primary school	457	59,5
	Secondary school	109	14,2
	High school	76	9,9
	University	25	3,3
	No literacy	101	13,2
Number of children in the family n = 772	1-2 children	241	31,2
	3-4 children	430	55,7
	5 and more	101	13,1
	No children	25	3,3
Is there a room in the house for children? n = 764	Yes	538	70,4
Do you have a social profession n = 643	Yes	550	85,5
Did you fail a class? n = 772	Yes	116	15,0

The age of the students was grouped under 2 categories: 14-16 years old and 17-19 years old. Table 1 shows that the only a difference between the upper age groups was having one's own room ($p < 0.05$). In the upper age group, the males outnumbered the females ($p < 0.05$). Carrying a gun ($p < 0.001$), seeing a gun at school ($p = 0.001$), threatening another person with a gun ($P < 0.001$), seeing another person threatened with a gun ($p < 0.05$), being injured with a gun ($p < 0.001$), having fired a gun at least once ($P < 0.001$), wanting to own a firearm ($P < 0.001$), having an unlicensed gun at home ($p < 0.05$), and knowing a person who owns a firearm ($p < 0.05$) were reported by significantly more of the 17-19-year-old students (Tables 1 and 2). There were no differences in terms of the other factors described in Tables 1 and 2 according to age.

Age distribution analysis of grade showed that the age of 46 students in the preparatory and 9th grade, and the age of 131 students in the 10th and 11th grades were not compatible with that of the majority of students' in their grade. In all, 116 (15%) students reported that they had been repeated a grade at least once.

When the Table 2 was examined, the answers given to the questions "do you have a person injured or killed with a firearm in your environment?" "do you hear your neighbors shooting?" "is the gun in your house licensed?" did not differ in terms of gender; between gender difference was significant and in favor of males in all the other answers. Considering that the questions "do you have a person injured or killed with a firearm in your environment?" and "do you hear your neighbors shooting?" might had

TABLE 2. Gender difference of the students who gave a “yes” answer (n : number of students who gave a “yes” answer to the questions)

	Those who gave a “yes” answer		Total “yes” answer	Difference between genders
	Female Yes	Male Yes	Total	
	n %	n %	n %	
Knowing somebody who owns a gun	168 53.7	344 75.6	512 66.7	< 0.001
Keeping a gun at home	85 27.1	176 38.9	261 34.0	= 0.001
Licensed gun at home	67 71.3	132 68.8	199 69.6	> 0.05 *
Carrying a gun	25 8.1	156 35.0	181 23.9	< 0.001
Seeing a firearm in the school	12 3.8	41 9.1	53 6.9	< 0.05
Seeing another person threatened with a firearm in the real life	30 11.1	104 24.9	134 19.4	< 0.001
Threatening somebody using a firearm	4 1.3	21 4.7	25 3.2	< 0.05
Having somebody injured or killed by firearm in the surroundings	83 26.9	141 31.6	224 29.7	> 0.05*
Getting injured by a gun	9 2.9	42 9.3	51 6.7	< 0.001
Wanting to own a firearm	43 14.1	200 45.0	243 32.4	< 0.001
Shooting a firearm	56 18.8	285 65.1	341 46.3	< 0.001
Hearing shotguns from the neighbors (each day-often)	31 10.1	64 14.3	95 12.6	> 0.05*

* chi-square test was used.

been interpreted as social questions, the fact that there was no difference in terms of gender was interpreted as a proof of the sincerity of the answers. 24 (3.2%) of the cases reported that they heard their neighbors shooting every day, 71 (9.4%) of them reported that they often heard, 322 (42.8%) of them said they sometimes heard, 250 (33.2%) students heard very rarely, and 86 (11.4%) of them stated that they never heard it. The students who reported that they heard their neighbors shooting each day and often were combined, and the cases were categorized in two groups. After the categorization, no difference was found between genders (Table 2).

The reason to want to own a gun was investigated, and it was shown that liking a gun (39.8%), protection (30.3%), hunting (9.5%), (5.7%) were stated by the male students; and protection (42.3%), liking a gun (31.7%), taking revenge on people who hurt her (19.0%) were female students' reasons.

Witnessing violence with a firearm

The students reported that the areas in which they witnessed violence most of the time was movies (39.9%), television (20.5%), police officers (11.6%), news on the newspapers (10.0%), computer and video games (6.3%) (n = 752).

Academic success

In all, 35% of the students who stated that they failed a class before also stated that they carried a gun before. It

was revealed that there was a significant decrease in the academic success of the students who reported that they carried a firearms ($p < 0.05$); wanted to own a firearms ($p < 0.001$); threatened somebody with a firearms ($p < 0.05$); witnessed somebody threatened with a firearms in the real life ($p < 0.05$); had been injured with a firearm before ($p < 0.05$); shot with a firearm before ($p < 0.001$); liked guns ($p < 0.001$); needed to talk about firearms with their peers ($p = 0.001$); hit their siblings and friends using a tool ($p < 0.05$) compared to those students who didn't report such actions.

Smoking, alcohol use, and their relations with firearms

In total, 30.9% of the students reported smoking and alcohol use (n = 765). Smoking and alcohol use was found to be significantly higher in those students who reported that they threatened somebody with a firearms ($p < 0.001$); had been injured with a firearms ($p < 0.001$); heard shooting each day or often ($p < 0.05$); shot with a firearm ($p < 0.001$); witnessed another person threatened with a gun in the real life ($p < 0.001$); liked guns ($p < 0.001$); needed to talk about guns with young people ($p < 0.001$) and saw a gun at the school ($p < 0.001$).

Young people's need to talk about guns and the role of health personnel

92% of the students stated that they needed to talk to some people about guns (n = 726). 47.4% of the students talked about this to their friends, 11.8% of them

TABLE 3. The effect of the other stress inducing factors/demographic characteristics on the stress level.

Stress level		Normal	Borderline	Adaptation difficulty	Total	X ² P
		n %	n %	n %	n %	
Gender N: 774	F	81 25.6	132 41.6	104 32.8	317 100.0	19.64 < 0.001
	M	182 39.8	173 37.9	102 22.3	457 100.0	
Age n: 774	14,15,16 ages	178 36.6	200 41.0	109 22.4	487 100.0	12.32 < 0.05
	17,18,19 ages	85 29.6	105 36.6	97 33.8	287 100.0	
Room for children at home	Yes	197 36.6	214 39.8	127 23.6	538 100.0	10.54 = 0.05
	No	64 28.3	84 37.2	78 34.5	226 100.0	
Perceived income level n: 769	Low	40 27.0	58 39.2	50 33.8	148 100.0	8.31 < 0.05
	Medium	128 33.6	151 39.6	102 26.8	381 100.0	
	Good	87 38.8	90 40.2	47 21.0	224 100.0	
	Very good	7 43.8	4 25.0	5 31.3	16 100.0	

*Chi-square test was used.

talked to the police, 9.0% of them talked to their teachers, 6.7% of the students talked to their girl or boy siblings, 1.7% of them talked to the doctors and 1.8% of the students talked to the nurses or other health personnel about this subject with their own will. The difference between gender in terms of talking about firearms with their own will was found to be in favor of male subjects ($p < 0.001$). There was no difference in terms of talking about firearms between the subjects who had a person injured or dead by a firearm in their environment and who got personally injured with a firearm. 3.6% of the students had a doctor, and 43.7% of them had a nurse working in their schools ($n = 744$). It was determined that 3.6% ($n = 744$) of the students talked to a doctor, and 43.7% of them talked to a nurse face-to-face about firearms. 6.6% of the female students and 9.6% of the male students ($n = 740$) stated that they intentionally answered the questions of doctors and nurses asked about firearms ($p > 0.05$); and 56.7% of the females and 50.6% of the males reported that they correctly answered these questions during the interview with doctors and nurses. There was not a significant difference between correctly and intentionally answering health personnel's questions about firearms in terms of stress level ($p > 0.05$). It was revealed that 54.0% of the students who had stress on an adaptation difficulty level talked before to doctors and nurses about firearms, and those who had higher stress level talked significantly more about firearms ($p < 0.05$).

Factors that influence stress level and relationship between firearms and stress

The mean stress level of all the students was 32. The mean stress level was found to be 33.6 for female students, whereas it was 31.7 for male students. 26.6% of the students' stress level was at the adaptation difficulty

level; 22.3% of the male students and 32.8% of the female students' stress level reached the clinically significant adaptation difficulty level.

Table 3 offered the relationship between demographic characteristics of the cases and their stress level, and the other factors determined as stress inducing factors. It was revealed that more cases' stress level among the female students, adolescents in the upper age groups, and those who had low-income level was at the adaptation difficulty level (Table 3). No difference was found in the factors that did not take place in Table 3, but that were described in Table 1 in terms of stress level (Table 1 and 3). The effects of contact with firearms on stress level can be seen in Table 4. It was revealed that except knowing somebody who owns a firearm, all the data presented in Table 4 were stress-inducing factors that might cause adaptation difficulty; other factors that were not indicated in Table 4, but that were described in Table 2 were not different in terms of stress level.

The factors such as frequency of hearing shot guns (MR: 0.87), threatening somebody using a gun (MR: 0.87), seeing a gun at the school (MR: 0.85), getting injured with a gun (MR: 0.83), income level (MR: 0.79), gender (MR: 0.77), seeing somebody threatened with a gun in the real life (MR: 0.75), carrying a gun (MR: 0.67), having a private room at home (MR: 0.62), having a room for children at home (MR: 0.56), type of the gun at home (MR: 0.53), having shot with a gun (MR: 0.51), whether the gun at home is licensed or not (MR: 0.46), whether keeping a gun is harmful or not (MR: 0.33), knowing somebody who owns a firearm (MR: 0.33), having a gun at home (MR: 0.17) were influential as stress inducing factors at the adaptation difficulty level. Other factors investigated and presented in Table

TABLE 4. Contact with firearms and stress level differences of the students (n: number of the students who answered the question, n*: number of those who gave a “yes” answer, p: difference between those who gave a positive and negative answer).

Stress level		Normal	Borderline	Adaptation difficulty	Total	* χ^2 p
		n* %	n* %	n* %	n* %	
Knowing somebody who owns a gun n: 768	Yes	161 31.4	212 41.4	139 27.1	512 100.0	5.10 > 0.05
Harmed because of keeping a gun at home n:748	Harmed	12 20.0	26 43.3	22 36.7	60 100.0	6.91 < 0.05
Carrying a gun n = 756	Yes	52 28.7	65 35.9	64 35.4	181 100.0	9.84 < 0.05
Seeing a firearm in the school n = 767	Yes	8 15.1	23 43.4	22 41.5	53 100.0	11.72 < 0.05
Threatening somebody using a firearm n = 761	Yes	4 16.0	2 8.0	19 76.0	25 100.0	19.43 < 0.001
Seeing somebody threatening with a firearm n=689	Yes	33 24.6	46 34.3	55 41.0	134 100.0	19.78 < 0.001
Getting injured with a gun n=765	Yes	8 15.7	20 39.2	23 45.1	51 100.0	12.42 < 0.05
Having somebody injured or killed by firearm in the surroundings n=755	Yes	58 25.9	89 39.7	77 34.4	224 100.0	12.85 < 0.05
Hearing shotguns from the neighbors n = 753	Each day Often	29 30.5	29 30.5	37 38.9	95 100.0	8.48 < 0.05
Wanting to own a firearm n: 750	Yes	70 28.8	87 35.8	86 35.4	243 100.0	13.38 = 0.001
Bullying/violent behaviors towards friends and siblings n=750	Yes	57 24.9	8 37.1	87 38.0	229 100.0	23.02 =0.001

*Chi-square test was used.

1 and 2 were found to be at lower effect level (Table 5). These findings pointed that stress at the adaptation difficulty level might be resulted from contact with firearms as well, hearing a firearm from the surroundings was found to be the most important stress inducing factor for adolescents, and the following most important factors were the actions performed by themselves using a firearm, and seeing a gun at school. Keeping a gun at home or knowing people who owns a gun in the surroundings were far less influential on the stress level

DISCUSSION

The present study was conducted in Düzce province in West Black Sea Region, where the use of firearms was quite widespread. In the literature, the rate of knowing somebody who owns a firearm was 19% for high school students (Kahn et al., 2001), this rate was found to be 66.7% in this study. Although there was not a similar

study conducted previously in this region, it was estimated that this rate would be high. In the study, the rate was found higher than our estimations, and it was thought that this was much more higher than the general rate in Turkey. According to the data of the year 2004 coming from Security General Directorate and Provincial Gendarmerie Command, there were 1845 licensed gun and 15949 rifle in the police region, 2117 licensed gun and 14498 licensed shotgun in the gendarmerie region (Emniyet Genel Müdürlüğü, 2004; Jandarma Genel Komutanlığı, 2004); these numbers were even high in 2004 considering the population (70 thousands), would increase if the unlicensed guns were included. Indeed, the records of Düzce Provincial Security Directorate of the years 2004-2008, the firearms were determined to be unlicensed in the $\frac{3}{4}$ of the events committed by firearms in the police region (Düzce Emniyet Müdürlüğü 2008). Although, no study was focused on this issue in our region, keeping an unlicensed gun is traditionally very

TABLE 5. The effect of contact with firearms on stress level.

	MR	R2	F	P
How often do you hear shotguns from the neighbors?	0.87	0.75	669.60	< 0.001
Have you ever threatened somebody using a gun?	0.87	0.75	648.31	< 0.001
Have you ever seen a gun in the school?	0.85	0.73	581.21	< 0.001
Have you got injured by any gun?	0.83	0.69	489.49	< 0.001
How do you think your income level is?	0.79	0.63	371.92	< 0.001
Gender	0.77	0.59	309.22	< 0.001
Have you seen somebody threatened in the real life?	0.75	0.56	277.42	< 0.001
Have you ever carried a gun?	0.67	0.45	182.19	< 0.001
Do you have your own room at home?	0.62	0.39	138.53	< 0.001
Do you have a room for children at home?	0.56	0.32	101.05	< 0.001
What's the type of the gun at home?	0.53	0.28	83.46	< 0.001
Have you ever shot a gun before?	0.51	0.26	76.84	< 0.001
Is the gun at home licensed?	0.46	0.22	60.10	< 0.001
Is keeping a gun at home harmful or not?	0.33	0.11	26.29	< 0.001
Do you know anybody who owns a firearm?	0.33	0.11	25.81	< 0.001
Do you have a gun at home?	0.17	0.03	6.49	= 0.011

Note: In order to determine the effective factor, regression curve estimation analysis was done using logistic model.

common. According to our results, only 69% of the students who had gun at home reported that their gun was licensed. It was argued that people who had unlicensed gun would hide this fact in their statement (Schuster et al., 2000). Related to this, only 35.7% of the students answered the question about the type of their gun. The fact that only 33.7% of the students gave a positive answer to the question “do you have a gun at home?” may be interpreted as the tendency to hide the presence of an unlicensed gun.

It was informed that 34% of the children in U.S.A had a firearm at home, this rate was increasing, and the number of the students aged between 13-17 who had firearm at home increased from 28% to 38% in a year (Schuster et al., 2000). A study conducted in New York, this rate was determined as 19.6%, but it was found to be lower than the national average.

A recent study revealed that a firearm was found in 16% of the houses in the city center, and in 51% of the houses in the countryside. This rate was found to be 34% in our study, which was quite high compared to the literature. It was asserted that at least a firearm was in 35% of the houses in U.S.A. and 69% of those had more than one firearms (Schuster et al., 2000). In this study, 35.7% of the students reported that they had gun

at home, and 12.2% of those had more than one. It was claimed that the children who had a firearm at home had increased interest for firearms, would be more ready to use firearms in the adulthood, and more insensitive towards firearms and violent events committed by firearms (Kahn et al., 2001). The fact that having a gun at home and in one's surroundings does not have an effect on the stress level of the adolescent (Table 4) support the idea that young people might be more insensitive towards firearms in a society where confrontation with a gun is accepted as normal.

The results of the questionnaire revealed that knowing somebody who owns a gun did not induce stress in the students. It was argued that the interpretation of an event had an important role in terms of the physical effects of the stress inducing events. The stress reaction starts with a decision concerning the danger of a stimulus as a result of a mental interpretation (Uçar, 2004). Cultural structure and value judgment are closely related to which acts are considered as violence in the community (Kocacık, 2001). The extensive use of firearms in this region was accepted as a part of the cultural structure and caused desensitization, thus did not appear as a stress-inducing factor. This desensitization might bring along an indifference to other violent events.

23.9% of the students reported that they carried a gun before, and this rate was found to be compatible with 22% rate determined in the studies conducted in U.S.A. and other developed countries (Braga and Kennedy, 2001; Ash et al., 1996; Lane et al., 2004). However, information about the frequency of carrying a gun was not acquired in this study. 6.9% of the students stated that they saw a firearm in the school, and bringing a firearm to the school was considered as the most important factor influencing carrying a firearm (Bailey et al., 1997). Seeing a firearm in the school increased the interest in firearms, and caused other students not to feel secure enough in the school environment (Dolins and Christoffel, 1994). This study also revealed that seeing a gun in the school influenced to a great extent the stress level (Table 5). The school makes some important contributions to the child such as interacting with a peer group, meeting people that the students can identify themselves with, learning a profession, learning general rules and requirements to live in a community, learning not to break the rules set up to protect the peace and serenity of the community (Akduman et al., 2007). Therefore, the school is the most important factor in an adolescent's life, and providing a secure and comfortable environment is needed for the mental health and academic success of the young individual who is in the process of building his or her future.

The school should be a haven for young adolescents individual and social problems in the process of physical and psychological change, and the self-confidence of the child as well as the academic success would be influenced if the school does not provide a secure and tolerant environment. This situation would stop the community from benefiting from the individual in an effective way, and cause to bring up individuals who would turn into crime and harm the community because of the bad models they met. It is argued that the adolescent would choose to stay away from the school environment because of the stress. This would influence the adolescent's development, success, adaptation and psychology in a negative way, especially the adolescents who stop going to the school would spend more time with their peers, and because their education was incomplete, the positive behaviors gained through education would not be attained and they would be more open to be included in the crime (Akduman et al., 2007).

The findings related to the age showed that, the interest towards firearms, contact with firearms and the cases that committed a violent event with firearms or witnessed it increased in the older students age group. This situation

points to the decreased parent control, closer relationship with peers who gained importance in the adolescent's life, increased necessity to make himself/herself accepted among the environment are observed with older adolescents in the literature (Akduman et al., 2007).

The findings concerning gender revealed that in the older students age group, the interest towards firearms, contact with firearms and the cases who committed a violent event with firearms or witnessed were significantly more observed in the male students. The reason for male students to come more into contact with firearms might be caused by the social structure of our society in which girls and boys are differently raised that gives more freedom to the male adolescents in the family and outside the family, which might result in participating to the peer groups. There are some findings in the literature showing that boys are more included in the crime events than girls (Dülger et al., 1992; Hancı and Ege, 1993).

Among the reasons to want a gun, protection was coming as the first reason for the girls, and it was the second reason for the boys; in accordance with the literature it was the first reason in the general evaluation (Schuster et al., 2000; Ash et al., 1996). The fact that girls felt more under threat might be related to the gender discrimination in the upbringing styles; consequently it was thought that girls felt more vulnerable.

The students who wanted to own a gun had higher stress level, and the reason might explain to the higher perceptions of the threats coming from the environment. Another point of view is that the increased stress level might cause the increased interest in firearms.

Bullying has become widespread among the school-aged people. A study on the adolescent behaviors revealed that the rate of the students who displayed bullying behaviors at least one in the past was 15-20% and this rate went up to 70% in some countries (Nansel et al., 2001). Smoking and alcohol use, carrying a firearm, displaying violent behaviors towards one's friends and siblings are interpreted as bullying behaviors. The students who had a tendency to bully had higher level of insecurity, anxiety, depression, loneliness, unhappiness, physical and psychological symptoms, and lack of self-confidence (Nansel et al., 2001). In our study, it was found that the students who displayed bullying behaviors had significantly high stress levels. In addition to that, it is claimed that these students who are inclined to violent behaviors might be more interested in firearms, and the students who self-confidence level is found to be low might use firearms for protection, as a self-confidence factor.

Another reason to carry a firearm was determined as conflict in the family and aggressive behaviors (Lane et al., 2004). The present study supported also this argument by showing that the students who displayed violent behaviors towards their friends and siblings had higher stress levels.

In our study, it was found that smoking and alcohol use and contact with firearms had similar effects on the stress level. Both of these factors are important in getting accepted by the peer groups, and as the stress level increases the tendency towards these factors increase.

It was revealed that contact with firearms caused a significant decrease in the academic success. This decrease might be interpreted as the increase in the stress level or the increase in the contact with firearms in students who have high stress level. But, this argument needs to be supported in different control studies.

The mass communication, which is constantly followed by the adolescents provide many images of firearms. It is thought that the images containing violence should not be featured on before certain hours, similar to the limited images of smoking and alcohol. The series in which the fight tools reminding of the firearms are shown should be stopped especially on the children channels.

It is claimed that the people who were exposed to violence with firearms wanted more to talk about firearms (Kahn et al., 2001). Several medical organization aimed to prevent the harm caused by firearms asserted that it would be helpful if the doctors talked to patients and their family about firearms (Committee on Adolescence, 1992; Committee on Injury and Poison Prevention, 1992). The studies showed that the adolescents preferred talking about firearms to the people such as friends, relatives, and people they considered as an authority than talking to doctors (Kahn et al., 2001). The interviews made previously by the health personnel in our study showed that 6.6% of the girls and 9.6% of the boys reported that they intentionally answered the questions of the doctors, and the nurses about firearms. The fact that 56.7% of the girls and 50.6% of the boys stated that the answers given were correct showed that the young people adopted enough the health personnel. However, since we did not have any information about the information and willingness level of the health personnel, we did not come to a conclusion which one of the methods was better (interview or questionnaire). In the literature, it was claimed that each method has some superiorities to one another in different ways (Duggal et al., 2000).

Confronting with less violent events more frequently is claimed to increase stress level (Compas, 1987; Garbarino et al., 2002). It is claimed that frequently hearing shotguns from the environment causes low density, insidious trauma in the adolescents, and the cumulative trauma effect is the most important factor increasing the stress level of the adolescent (Table 5). In an environment, where some people injured or killed by stray bullets, shotguns cause an anxiety about one's life, and results in increase in the stress level.

The cross-sectional characteristic, the fact that the crime behavior and its relationship to firearms, the parents' perspectives and relations with guns, and the reality of the perceived outside threat were not investigated might be presented as the shortcoming of this study. In the future, the studies should be parents and schools based longitudinal studies. The students were not asked their identities in order to make them comfortable about securely offering information about themselves. However, this application prevented the chance to reach the children who had high stress level and obtain information about their family and close environment.

CONCLUSION AND SUGGESTION

Knowing adults who own or carry a gun is seen as a stress inducing factor during the adolescence, and seeing their friends carry a gun or bring to the school might cause stress in young people. Using firearms or seeing somebody using firearms is actually an important stress factor. In addition to that, the young people who hear shotguns from the close environment for any reason are more stressful, and together with other stress inducing factors this might adaptation difficulty in some children. Considering the fact that stress inducing factors leads to serious problems such as depression and suicides resulted from severe depressions, it is claimed that shotguns even in the celebrations in our region harms young people psychologically as well as physically. Parents should be more careful in taking their adolescent and younger children to hunt, considering that hunting has an important role in increasing the contact with firearms. Parents and school administrations should collaborate to prevent young people from reaching firearms and bringing firearms to the school. The school aged children and their parents should be informed about having a firearm at home and carrying it do not make the environment they are living in safer. In the educative seminars, parents should be informed on the fact that children's contact with firearms will increase the stress level that is already present because of the daily life events, cause drastic de-

crease in the academic success, and unexpected accidents and injuries. The children should be informed about how to keep a firearm if it is obligatory to keep it (professional reasons, or inherited antique firearms). Considering the child injuries caused by the lack of safety measures in the events committed by firearms, the present laws should be revised in order to impose the necessary punishment to those who did not take the safety measures. The people who will receive a license should be participated to a certificate program to introduce the gun, and thought the familial and environmental risks of owning a gun and the ways to prevent those risks. These applications would contribute to form a more conscious

group of adults concerning firearms in the future. For this purpose, organizing campaigns in the schools and media, and explaining risks of this subject to the adolescents would be considerably helpful. In order to prevent to bring gun in the school in the short term, setting legal restrictions about keeping gun in the school or close environment similar to the restrictions in most of the regions in USA would be effective.

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