

Psychological Symptoms Related with Violence and Its Relationship with Internalizing and Externalizing Problems Among 10th Grade Students in Istanbul

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ABSTRACT

Psychological symptoms related with violence and its relationship with internalizing and externalizing problems among 10th grade students in Istanbul

Objective: Aim of this study was to evaluate the associations of gender, self-destructive behavior (self-harming behaviors - [SHB]) and suicidal ideation/attempts - [SI/A]), lifetime substance use (tobacco, alcohol and any drug) and psychological variables (depression, anxiety, anger and impulsivity) with having psychological symptoms after experiencing or witnessing any violence, serious assault or battery event among 10th grade students in Istanbul/Turkey.

Methods: Online self-report survey was conducted based on 4957 10th grade students selected according to multi-stage sampling in 45 schools from 15 districts of Istanbul.

Results: Risks of assault from a peer, physical fight within last year, bearing arms, disciplinary punishment and problems with the law were higher in the group with psychological symptoms (GPS). Together with SHB and SI/A, lifetime tobacco and any drug use, male gender, depression, anxiety, and anger predicted the GPS.

Conclusion: The findings suggest that with a single and simple question, high risk group of GPS can be determined, followed and offered proper help for both internalizing problems and externalizing behaviors, whether or not they are consequences of the victimization.

Keywords: Adolescence, online survey, psychological problems, self-destructive behaviors, substance use, victimization



ÖZET

İstanbul'da 10. sınıf öğrencileri arasında şiddet ile ilgili psikolojik belirtiler ve şiddetin içselleştirme ve yansıtma sorunları ile ilişkisi

Amaç: Bu çalışmanın amacı İstanbul'da 10. sınıf öğrencileri arasında cinsiyet, kendine karşı yıkıcı davranış (kendine zarar verme davranışları [KZVD]) ve suisid düşüncesi / girişimi (SD/G)) ve yaşam boyu madde kullanımının (sigara, alkol ve herhangi bir madde), herhangi bir şiddet, ciddi saldırı ve dövme olayına maruz kalma ya da tanık olma sonrası gelişen depresyon, anksiyete, öfke ve dürtüsellik gibi psikolojik değişkenlerin ilişkisini değerlendirmektir.

Yöntem: Çalışma, çevrimiçi sistemle İstanbul'un 15 ilçesinden 45 okulda çok aşamalı örnekleme göre seçilen 4957 onuncu sınıf öğrencisi ile gerçekleştirildi.

Bulgular: Bir yaştıktan saldırı riski altında olma, geçen yıl içinde fiziksel kavga, bıçak taşıma, disiplin cezası ve yasalarla sorun yaşama, psikolojik belirtiler olan grupta (GPS) daha yüksek bulundu. GPS'yi öngörenler KZVD ve SD/G ile birlikte, yaşam boyu tütün ve herhangi bir madde kullanımı, erkek cinsiyet, depresyon ve anksiyete idi.

Sonuç: Bulgular tek ve basit bir soru ile, GPS için yüksek risk grubunun belirlenebileceğini, izlenebileceğini ve mağduriyetin sonuçları olsun ya da olmasın hem içselleştirme sorunlarına hem de davranışları yansıtmaya ilişkin uygun bir yardım önerilebileceğini düşündürmektedir.

Anahtar kelimeler: Ergenlik, çevrim içi araştırma, psikolojik sorunlar, kendine karşı yıkıcı davranış, madde kullanımı, mağduriyet

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INTRODUCTION

Exposure to or witnessing of violence and/or assault among adolescents is a significant public health problem worldwide. As many as two in three adolescents report having been exposed to psychological trauma (1), among which most include victimization, such as exposure to or witnessing of abuse or domestic or community violence (2-5). A study conducted in North America with a nationally representative sample of youths aged 2 to 17 years reported that over half of the sampled individuals had experienced physical assault during the survey year; approximately 1 in 8 experienced childhood trauma; approximately 1 in 12 suffered from sexual victimization; and as many as 1 in 3 had witnessed some form of violence (6). Similarly, in the study that was based on a cross-sectional national telephone survey that included children aged 0 to 17 years found that a clear majority (60.6%) of the sample had directly experienced or witnessed victimization in the previous year. Also almost half (46.3%) had experienced a physical assault in the study year (7). These figures gained from studies conducted in North America suggest that a large number of children and adolescents are exposed to direct victimization and witnesses to other forms of violence.

Exposure to violence in any setting (i.e., home, community, or school) tends to have serious behavioral and mental-health consequences for children and adolescents, both as a witness and as a victim (8). The findings of a previous study suggested that in the general child and adolescent population victimized respondents displayed significantly more psychological and behavioral symptomatology than did no victimized respondents, even after controlling for some other possible sources of distress (9). Victimized adolescents are at risk for posttraumatic stress disorder (PTSD), major depressive disorder (MDD), and substance use disorders (SUD) (10). Not only recent victimization but also prior childhood experiences of traumatic stressors such as abuse and domestic violence may put adolescents at risk for PTSD (1,2,10), MDD (2,10,11), SUD (2,10,12) and suicidal ideation/attempt (SI/A) (12-14).

Whether as a witness or a victim, exposure to violence is related to a number of emotional and behavioral problems, such as posttraumatic stress, depression, anxiety, anger, dissociation, and self-destructive and aggressive behavior (15,16). Exposure to violence in general also is associated positively with risk for perpetrating aggression and violence (15). In a large sample of 6th, 9th, and 12th graders, different types of adverse childhood experience were significantly associated with adolescent interpersonal violence perpetration (delinquency, bullying, physical fighting, dating violence, weapon-carrying on school property) and self-directed violence, such as self-harming behavior (SHB) and SI/A (17). Also a recent study suggested that physical abuse increases the risk of SI/A among adolescents directly and indirectly through reduced self-esteem (18).

Using data of the National Survey of Adolescents (NSA), Kilpatrick et al. (10) found that exposure to interpersonal violence increased risk for each SUD after controlling for demographic and familial variables. Using the same data, Kilpatrick et al. (2) also found that exposure to interpersonal violence (i.e., physical assault, sexual assault, or witnessed violence) increases the risk of PTSD, MDD and SUDs among adolescents. There are studies suggesting gender differences in both violence exposure and violence-related mental health (2,19). For example, Kilpatrick et al. (2) found that girls were 2.5 times more likely than boys to be diagnosed with comorbid PTSD and MDD, and boys were twice as likely as girls to be diagnosed with SUD (12-month prevalence was 8.2% for boys and 6.2% for girls).

Community violence exposure is associated with various forms of psychological distress, including internalizing problems (e.g., anxiety, depression, anger, hyperarousal, PTSD, dissociation) (20,21) and externalizing behaviors (e.g., aggression, conduct problems, substance use, self-destructive behavior) (22). In a meta-analysis of studies that examined the relationship between domestic violence exposure in childhood and adolescent internalizing problems and externalizing behaviors, Evans et al. (23) found significant mean-weighted effect sizes of 0.48 (SE=0.04) for internalizing problems and 0.47 (SE=0.05) for

externalizing behaviors, indicating moderate associations between exposure and both outcomes. Specifically, girls may use internalizing coping strategies to alleviate and/or cope with exposure to violence, whereas boys more often employ externalizing coping strategies (2,24-27).

Externalizing behaviors as a secondary response often include substance abuse in an attempt to self-medicate, decreased school involvement, and increased aggressive, antisocial behavior leading to re-victimization (28). A previous study conducted in Istanbul found that the most common aggressive behavior among students of 14-18 years of age was found to be "battery others" (34.5%) (29). Although not representative for Istanbul, in this study, high school students' past experiences of violence (direct exposure to violence/witnessing violence/exposure to/witnessing attack with knife/gun) were determined as the factor contributing most to aggressive behavior. Exposure to multiple forms of violence, across multiple domains of life, negatively impacts adolescent outcomes, including substance use (30). Evidence indicates an association between victimization, both direct (primary) and indirect (secondary), and adolescent substance use (2,30-34). A study conducted in 5 countries suggested that traditional risk-taking behaviors such as smoking and drinking were highly associated with the expression of violence-related behavior (35). In a recent study, Giordano et al. (36) showed that children aged under 15 years who witnessed an extraordinary victimization (such as a parent or sibling being assaulted) appear to have approximately twice the risk of developing a SUD than those who did not. Most of the previous studies did not find significant gender differences in the strength of these associations between victimization and substance use (10,27,32,37). Finally, exposure to victimization in childhood was related with SUD among the treatment-seeking adult male Turkish samples (38).

A significant body of information currently exists about violent behavior in the adolescent population of North America. Thus, cross-national research is needed to understand better the sociocultural context of witnessing or being a victim of violence and to inform

youth violence prevention efforts. A study conducted among youths in 27 countries and cities suggested that the rate of very frequent physical fighting differed between countries and varied by region (39). For example, in this study the Eastern Mediterranean, where Turkey is located, had a significantly higher prevalence of frequent fighting than Asia. Some cross-sectional research focuses solely on the consequences of experiencing indirect victimization (e.g., witnessing violence), others examine direct victimization (e.g., being personally victimized), and still others combine both forms of victimization without assessing the relative impact of each on substance use (34). Furthermore, many of these studies only evaluated the relationship between the presence of experiencing or witnessing any violence and internalizing problems or externalizing behaviors; there are no studies to evaluate these problems or behaviors among adolescents still reporting psychological symptoms after experiencing or witnessing any violence. Located between Europe and Asia Istanbul with its population of 15 million is the biggest city of Turkey, which is a developing country with a majority of the people being Muslim. Evaluating the internalizing and externalizing factors associated with the presence of reported psychological symptoms related to victimization among high school students in Istanbul is very important not just for Turkish youths, but possibly for youths in many other developing and/or Muslim nations (40). Thus, in the current study we examine the relationship between reporting psychological symptoms after experiencing or witnessing any violence, serious assault or battery event and gender, self-destructive behavior (SHB and SI/A), lifetime substance use (tobacco, alcohol and any drug) and severity of psychological symptoms (depression, anxiety, anger and impulsivity) among 10th grade students in Istanbul/Turkey.

METHOD

Multi-stage sampling was performed to select subjects. The multi-stage sample was initially stratified according to the 15 districts of Istanbul. Tenth-grade students in different geographical areas and different

schools were enrolled in the study. The primary sampling units were schools, selected with a probability proportional to student enrolment numbers (45 schools from the 15 districts). Next, 1 or 2 classes within each participating school were selected systematically with equal probability sampling. All students in selected classes were included into the study sample.

Five thousand three hundred eighty three students participated in the study and entered the system from the Internet to fill in the questionnaire. Although none of the students refused to participate in the study, 410 students were excluded because they left some parts of the scales unfilled, and 35 students were excluded because of the trap question. Thus, a representative sample of 4938 students participated in the study. When we compared the students excluded from the study and included in the study, mean age (16.69 ± 6.44 , 15.58 ± 2.85 respectively, $t=3.57$, $p<0.001$) and male ratio (62.8% and 52.7% respectively, $\chi^2=16.11$, $df=1$, $p<0.001$) were higher in the excluded group.

This study was part of a Project in Turkey called GENCIZ, which through its website allows surveys for high school and university students from different cities. The aim of the main study conducted through this website was to determine the prevalence of smoking, alcohol use, and substance use among 10th grade students in Istanbul Turkey, and to compare them with previous studies (41). Data of this previous study were used to conduct the present study.

Measures

The questionnaire administered online in the study was similar to another questionnaire used formerly in Turkey (42-44). This questionnaire was adapted and developed from a large international scale used in the European School Survey Project on Alcohol and Other Drugs (ESPAD) (45) and had previously been used in published studies (46,47). The questionnaire included sections about demographic data, school life and performance, psychological and behavioral problems, and the use of substances including tobacco, alcohol, and drugs. Also, the questionnaire included the Psychological Screening Test for Adolescents (48).

Nevertheless, with this questionnaire symptoms were examined and not disorders meeting diagnostic criteria.

If students were still having psychological symptoms related with victimization was determined by the question "Have you ever experienced or witnessed any violence, serious assault or battery event?" Those who chose the answer "yes" also had to choose if they were still having mild, moderate, very much or excessive anxiety, restlessness, and/or insomnia after experiencing or closely witnessing these events.

The Psychological Screening Test for Adolescents

The Psychological Screening Test for Adolescents (PSTA) (48) was developed by adaptation of the Examination and Assessment Form for Juvenile Offenders (ARDEF) (49), which was developed with the purpose of investigating risk of recidivism and needs of children and adolescents who are in conflict with the law. By shortening the number of ARDEF items, PSTA questions were formulated for screening purposes. In the present study, 4 subscales were used: depression, anxiety, anger, and impulsivity. There are 2 more subscales named sensation seeking and lack of assertiveness, which were not used in the present study. The statistical investigations have shown that PSTA has an interrater reliability of $r=0.89$ and a high internal reliability ($\alpha=0.79$). There is a high level of positive correlation between Youth Self Report which is widely used among 6 to 18-year-old adolescents for psychological problems, and PSTA total score ($r=0.60$) (50). Cronbach's α for depression (0.72), anxiety (0.60), impulsiveness (0.77) and anger (0.75) were moderate to high in the present study. This questionnaire was also used in another recent study (51).

Self-Harming Behavior Questionnaire

The questionnaire included a question asking about a history of SHB within the last year that had been used in the previous study (52). Self-harm was defined as "deliberate self-injury to body tissue without the intent to die." The SHB question was: "Do you harm

yourself intentionally? (never/at least once)" The question also included the most commonly used methods of SHB in parentheses (cutting, burning, hitting oneself, inserting sharp objects into body orifices, and pulling out body hair) (53).

Procedure

The study was carried out between October 2012 and December 2012. The study was made online. A website had been prepared for this purpose. The Ethics Committee of Acibadem University approved the study. A research assistant was assigned for each school included in the study. Research assistants were teachers appointed by the Turkish Ministry of Education. Research assistants of 45 schools were given an education by ACD regarding how to participate in the study. The study protocol was thoroughly explained to students by these research assistants. The students were asked to complete the form on the website. Questionnaires in the system were filled in anonymously. Informed consent was given by students through clicking the link on the website. In the online system, it is not allowed to leave any questions blank; however, students wishing not to answer the questions were allowed to leave the program without completing the questionnaire.

Statistical Analysis

The statistical package SPSS 17.0 for Windows (SPSS, 278 Chicago, IL) was used for all analyses. Mean age was compared by means of Student t test. Categorical variables were compared with Chi-square test. Two univariate covariance analyses (ANCOVA) were conducted, where presence of psychological problems was a dependent variable in both of these analyses. In the first one, lifetime tobacco, alcohol and substance use were fixed factors and gender, depression, anxiety, anger and impulsivity were independent variables. In the second one, self-harming behavior and suicidal thoughts were fixed factors and gender, depression, anxiety, anger, impulsivity, lifetime tobacco, alcohol and substance use were independent variables. For all statistical analysis, p values were 2-tailed, and differences were considered significant at $p < 0.05$.

RESULTS

Among the total sample, 9.3% ($n=459$) reported that they were still having mild, 1.6% ($n=79$) moderate, 0.6% ($n=30$) very much and 0.9% ($n=46$) excessive anxiety, restlessness, and insomnia after experiencing any violence, serious assault or battery event or closely witnessed it. Thus, a total of 614 (12.4%) adolescents who were still

Table 1: Socio-demographic characteristics of the sample

	No trauma		Trauma		χ^2	p	Odds Ratio (95% CI)
	n=4343	%	n=614	%			
Age (years; Mean±SD)	15.48±2.27		16.10±4.90		$t=-3.04$	0.002	
Gender							
Female	2079	88.7	264	11.3	5.13	0.024	1.22 (1.03-1.44)
Male	2264	86.6	350	13.4			
Economic status*							
Poor	160	71.7	63	28.3	70.33	<0.001	
Medium	2322	86.7	357	13.3			
Good	1861	90.6	194	9.4			
School type**							
State	4121	87.6	583	12.4	3.11	0.078	
Private	135	92.5	11	7.5			
Assault from a peer	425	9.8	189	30.8	218.52	<0.001	4.10 (3.36-5.00)
Physical fight within last year	1294	29.8	388	63.2	267.64	<0.001	2.05 (3.39-4.83)
To bear arms	399	9.2	193	31.4	263.15	<0.001	4.53 (3.71-5.53)
Disciplinary punishment	396	9.1	148	24.1	123.66	<0.001	3.17 (2.56-3.91)
Problems with the law	313	7.2	179	129.2	289.80	<0.001	5.30 (4.30-6.53)

SD: Standard deviation, CI: Confidence Interval, *Economic status was self-consideration of students, **Schools with mixed status was removed from evaluation.

having psychological symptoms in different degrees after experiencing or witnessing such events was considered as group with psychological symptoms (GPS).

Mean age of the GPS ($M=16.10$, $SD=4.90$) was higher than the students' who were not having any kind of these symptoms (non-GPS) ($M=15.48$, $SD=2.27$) ($p=0.002$). Rate of GPS group was higher in males (13.4%, $n=350$) than females (11.3%, $n=264$, $p=0.24$) and among those who consider their socioeconomic status as poor (28.3%, $p<0.001$). There was no difference according to the type of school (Table 1). Risk of assault from a peer (30.8%, $n=189$, $p<0.001$), physical fight within the last year (63.2%, $n=388$, $p<0.001$), to bear

arms (31.4%, $n=193$, $p<0.001$), disciplinary punishment (24.1%, $n=148$, $p<0.001$) and problems with the law (29.2%, $n=179$, $p<0.001$) were higher in the GPS (Table 1).

According to the first univariate covariance analysis (ANCOVA), together with lifetime tobacco ($F[df]=26.66$, $p<0.001$) and any drug use ($F[df]=42.97$, $p<0.001$), male gender ($F[df]=15.61$, $p<0.001$), depression ($F[df]=12.86$, $p<0.001$), anxiety ($F[df]=33.67$, $p<0.001$), anger ($F[df]=30.39$, $p<0.001$), impulsivity ($F[df]=4.13$, $p=0.042$) predicted the GPS. Effects of lifetime tobacco and any drug use interacted with each other ($F[df]=9.53$, $p=0.002$) (Table 2).

Table 2: Univariate covariance analysis (two way ANCOVA) on presence of psychological problems as dependent variable, and tobacco, alcohol and any drug use as main factors (Gender, depression, anxiety, anger and impulsivity as covariates).

	Type III Sum of Squares	df	Mean Square	F	p
Male	1.504	1	1.504	15.61	<0.001
Depression	1.239	1	1.239	12.86	<0.001
Anxiety	3.244	1	3.244	33.67	<0.001
Anger	2.927	1	2.927	30.39	<0.001
Impulsivity	0.398	1	0.398	4.13	0.042
Tobacco	2.568	1	2.568	26.66	<0.001
Alcohol	0.008	1	0.008	0.08	0.780*
Any drug**	4.139	1	4.139	42.97	<0.001
Tobacco ^x Alcohol	0.031	1	0.031	0.32	0.570*
Tobacco ^x Any drug**	0.918	1	0.918	9.53	0.002
Alcohol ^x Any drug**	0.156	1	0.156	1.62	0.200*

a. $R^2=0.106$ (Adjusted $R^2=0.104$), *Non significant, **any substance other than alcohol and tobacco

Table 3: Univariate covariance analysis (two way ANCOVA) on presence of psychological problems as dependent variable, and self-harming behavior and suicidal thoughts as main factors (Gender, depression, anxiety, anger, impulsivity, tobacco, alcohol and any drug use as covariates).

	Type III Sum of Squares	df	Mean Square	F	p
Male	1.758	1	1.758	18.51	<0.001
Depression	0.703	1	0.703	7.40	0.007
Anxiety	2.241	1	2.241	23.59	<0.001
Anger	1.086	1	1.086	11.44	0.001
Impulsivity	0.221	1	0.221	2.33	0.130*
Tobacco	1.245	1	1.245	13.11	<0.001
Alcohol	0.152	1	0.152	1.60	0.210*
Any drug**	6.448	1	6.448	67.89	<0.001
Self-harming behavior (SHB)	2.180	1	2.180	22.95	<0.001
Suicidal thoughts (ST)	3.154	1	3.154	33.20	<0.001
SHB ^x ST	0.007	1	0.007	0.069	0.790*

a. $R^2=0.118$ (Adjusted $R^2=0.116$), *Non significant, **any substance other than alcohol and tobacco

According to the second univariate covariance analysis (ANCOVA), together with SHB ($F[df]=22.95$, $p<0.001$) and SI/A ($F[df]=33.20$, $p<0.001$), lifetime tobacco ($F[df]=13.11$, $p<0.001$) and any drug use ($F[df]=67.89$, $p<0.001$), male gender ($F[df]=18.51$, $p<0.001$), depression ($F[df]=7.40$, $p=0.007$), anxiety ($F[df]=23.59$, $p<0.001$) and anger ($F[df]=11.44$, $p=0.001$) predicted the GPS. Effects of SHB and SI/A did not interact with each other ($F[df]=0.69$, $p=0.79$) (Table 3).

DISCUSSION

The rate of adolescents reporting that they were still having psychological symptoms after experiencing or witnessing any violence, serious assault or battery event, such as anxiety, restlessness, and insomnia in different degrees, was 12.4%. Thus, the rest of the sample consisted of those who had not been victimized and those who experienced victimization but did not report psychological symptoms. First of all, the main finding of the present study is that among 10th grade students, being in the GPS was related with internalizing problems (depression, anxiety and anger), externalizing behaviors (SHB, SI/A, lifetime tobacco and any drug use) and male gender. Witnessing and being a victim of violence were found both positively and significantly associated with child psychological trauma symptoms and self-reported violent behavior, even after controlling for the effects of various demographic factors (8). Being exposed to victimization is prevalent among adolescents and places youths at high risk for psychiatric impairment and for delinquency (54). There are commonly reported trauma-related symptoms (internalizing problems) such as depression, anxiety, anger, disgust, guilt, shame, and sadness (55-57) which may also be related with externalizing behaviors such as SHB, SI/A (58,59) and substance use (60) in adolescents. Indeed, depression, anxiety, anger, impulsivity, and substance abuse have been repeatedly shown to be associated with SHB and SI/A among young people (61,62). Consistent with this observation, impulsivity was no longer a predictor of the GPS when SHB and SI/A were

included in the analysis. Also, Zoroglu et al. (63) reported that each type of childhood trauma contributed to SHB and SI/A in Turkish adolescents. Although there is a significant link between SHB and SI/A (64), substance use, SHB and SI/A independently predicted the GPS in the present study, and their effects did not interact. Nevertheless, cross-sectional design of the present study makes it impossible to say anything about the direction of the causal relationships between variables of interest. Reliance on cross-sectional data is problematic because it precludes identification of causal pathways and because psychological problems (internalizing problems) or self-destructive behaviors and substance use (externalizing behaviors) may precede exposure or witnessing to violence rather than the reverse (30,33,65). Thus, internalizing problems or externalizing behaviors may precede rather than the being consequences of psychological symptoms reported by adolescents to be secondary to experiencing or witnessing any violence in the present study.

Studies conducted in North America suggest that adolescents who are more likely to engage in violent behavior are frequently male, of junior high school age, and cigarette and alcohol users (66-68). Similar results were reported in a study conducted in Israel, which found that daily smoking, use of hard drugs, and a history of drunkenness and binge drinking were the best predictors of violent behavior (69). In a recent study conducted in 27 countries to evaluate frequent fighting found that in 20 of these countries boys were more likely to report frequent fighting than girls (39). Although there is substantial evidence that males are more likely than females to be exposed to violence in their communities (30,31,65,70), when considering consequences, only one gender difference emerged in a study conducted by Pinchevsky et al. (33). Females who had been directly victimized engaged in more frequent binge drinking than males who had been directly victimized. Nevertheless, in the present study the rate of having been exposed to violence is not known, but the rate of GPS was higher among males than females and male gender predicted the GPS.

Although rates of victimization from violence at

home, community, or school are high (8), witnessing violence in any setting is also a serious problem for young people, particularly at school because youths spend a large portion of their day among large, often loosely managed groups of peers at school. Another important finding in the present study was that risks of assault from a peer, physical fight within last year, to bear arms, disciplinary punishment in school and problems with the law were higher among those still having psychological symptoms after direct or indirect victimization. Occasional fighting is a relatively common behavior for youths, and strong relationships exist between frequent fighting and other manifestations of violence, risk-taking behavior, and misconduct (71,72). Cross-sectional, school-based nationally representative survey at ages 11.5, 13.5, and 15.5 years in 5 countries (Ireland, Israel, Portugal, Sweden, and the United States) suggested that mean frequency of fighting in these 5 countries was 30.8%, whereas mean frequency of weapon carrying was 10.4%. Fighting was most highly associated with smoking, drinking, feeling irritable or bad tempered, and having been bullied (35). Previous research suggested an association between childhood maltreatment and adolescent weapon-carrying (73), violent behavior and delinquency (74,75). In a study conducted by Duke et al. (17), different types of adverse childhood experience were significantly associated with adolescent interpersonal violence perpetration (delinquency, bullying, physical fighting, dating violence, weapon-carrying on school property). According to a previous study, internalizing symptoms and anger may be psychological mediators of the relationship between childhood maltreatment and adolescent violent behavior (74).

Alcohol, tobacco, and other drug use may be related with witnessing, perpetrating, and being a victim of violence (2,30-34). One frequently cited explanation is that substance use places individuals at increased risk for violence exposure (76), perhaps through lifestyle factors such as association with violent peers and engagement in illegal activities. Exposure to traumatic events may not per se increase the risk for SUD (77) and internalizing problems, such as depression,

anxiety, anger, or PTSD, which might be a causal risk factor for SUD through self-medication (77,78). Nevertheless, comorbidity of internalizing problems and externalizing behaviors such as substance use might be influenced by shared risk factors other than violence exposure (77); i.e., comorbidity may represent a genetically mediated vulnerability to psychopathology after trauma (79). In addition, Oswald et al. (80) suggested that early trauma may lead to enhanced sensitivity to substances and that this mechanism may underlie increased vulnerability for drug abuse. In a recent study conducted among adolescents, victimization experiences were associated with increased contemporaneous substance use, while the impact on substance use declined over time (34). Lifetime tobacco and drug use predicted the GPS in the present study, and their effects also interacted, whereas alcohol use did not predict the GPS, although the rate was higher in the GPS. Consistent with this, in a previous study none of the independent measures of exposure to violence significantly predicted future alcohol use (30).

Previous research found relationships between physical and/or sexual abuse and self-destructive behavior, including SHB and SI/A among adolescents (81-83). In a large sample of adolescents, different types of adverse childhood experience were significantly associated with self-directed violence (SHB and SI/A) (17). When people experience or witness violence, they often respond with a range of negative emotions (e.g., anger, frustration, depression, anxiety) (33), and self-destructive behavior or substance use (externalizing behaviors) may be employed as a coping mechanism to reduce the burden of these negative emotions.

This study is an online survey system made for the first time in Turkey. We think that studies to compare online survey methods with traditional survey methods and investigate their compatibility with our culture are needed. Methodology is the strongest point of the present study, as it employs adequate sample size and proper sampling method, whereas the main limitation was the cross-sectional nature of the study; hence, we were only able to report associations rather than

definitive temporal or causal relationships. Another important limitation is that the analyses were based on self-reported data, which may yield conservative estimates as a result of underreporting (47,84). Finally, our sample was only representative for high schools in Istanbul, which limits the generalizability of our results to Turkey in general. Similar studies need to be performed in different cities and diverse samples, including young adults and adolescents who are not attending college, to assess the generality of the findings (47).

The present study provides an important addition to the current body of literature on violence among adolescents. A significant body of information currently exists about violent behavior in the adolescent population of North America. To date, we are unaware of any other study specifically addressing the relationship between the presence of reported psychological symptoms after (experiencing or

witnessing) violence and internalizing problems or externalizing behaviors. The findings suggest that since having psychological symptoms after experiencing or witnessing any violence is related with both internalizing problems (psychological variables) and externalizing behaviors (self-destructive behavior and lifetime substance use) among 10th grade students, with a single and simple question this high risk group should be determined, followed and offered proper help for both internalizing problems and externalizing behaviors, whether or not these are consequences of the victimization. Determination and treatment of the negative impact of adolescent victimization may reduce substance use, SHB and SI/A. Selective interventions should be directed toward individuals who are at greater risk for SI/A, and indicated preventions should be targeted at individuals who have already begun SHB and substance use.

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