

Original article / Araştırma**Gender differences according to psychological and behavioral variables among 10th grade students in Istanbul****Cüneyt EVREN,¹ Müge BOZKURT,¹ Arzu ÇİFTÇİ DEMİRCİ,¹
Bilge EVREN,² Yeşim CAN,¹ Gökhan UMUT¹****ABSTRACT**

Objective: Aim of this study was to determine the gender differences according to psychological and behavioral variables among 10th grade students in Istanbul/Turkey. **Methods:** Cross-sectional online self-report survey conducted in 45 schools from the 15 districts in Istanbul. The questionnaire included sections about demographic data and school life. Also depression, anxiety, anger, sensation seeking, assertivity and impulsivity subscales of Psychological Screening Test for Adolescents (PSTA) were used. The analyses were conducted based on the 4957 subjects. **Results:** Rate of males was 52.7% (n=2614). Mean age, sensation seeking and impulsivity scores were higher in males, whereas depression, anxiety, anger and lack of assertivity scores were higher in females. Rates of poor school success, disciplinary punishment, absenteeism, truancy before age of 13, physical harm from a friend, physical fight in last year, to bear arms and problem with the law were higher in males, whereas having suicidal ideation or attempt were higher in females. In logistic regression model, school related problems (poor school success, absenteeism and truancy before age of 13), delinquent behavior (physical fight in last year, to bear arms and physical harm from a friend), sensation seeking, and lower depression, anxiety, anger, impulsivity, lack of assertivity, and suicidal ideation differentiated males from females. **Discussion:** The findings suggest that females have higher psychological problems such as anger, depression and anxiety, which may also be related with suicidal thoughts, whereas males have higher school related and behavioral problems. (*Anatolian Journal of Psychiatry* 2015; 16(2):77-84)

Key words: adolescence, behavioral problems, gender, online survey, psychological problems

İstanbul'daki 10. sınıf öğrencileri arasında psikolojik ve davranışsal değişkenlere göre cinsiyet farklılıkları**ÖZET**

Amaç: Bu çalışmanın amacı İstanbul/Türkiye'deki 10. sınıf öğrencileri arasında psikolojik ve davranışsal özelliklere göre cinsiyet farklılıklarını belirlemektir. **Yöntem:** Özbildirime dayalı bu kesitsel ve online araştırma İstanbul'daki 15 ilçede yer alan 45 okulda yürütüldü. Soru formu demografik bilgileri ve okul yaşamını içeriyordu. Ayrıca Ergenler için Ruhsal Sorunlar Tarama Ölçeğinin depresyon, anksiyete, öfke, yenilik arayışı, asertiflik eksikliği ve dürtüsellik alt ölçekleri kullanıldı. Analizler 4957 hasta üzerinden yapıldı. **Sonuçlar:** Erkeklerin oranı %52.7'di (s=2614). Ortalama yaş, yenilik arayışı ve dürtüsellik puanları erkeklerde yüksekken; depresyon, anksiyete, öfke ve asertivite eksikliği kadınlarda yüksekti. Düşük okul başarısı, disiplin cezası, devamsızlık, 13 yaşından önce okuldan kaçma,

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Geliş tarihi: 15.02.2014, **Kabul tarihi:** 14.05.2014, **doi:** 10.5455/apd.160603

*bir arkadaştan fiziksel zarar görme, geçen sene içerisinde fiziksel bir kavgaya karışma, silah taşıma ve yasal sorunlar erkekler arasında daha fazlayken; intihar düşüncesi ve girişimi kadınlarda daha fazlaydı. Lojistik regresyon modelinde okulla ilişkili sorunlar (düşük okul başarısı, devamsızlık ve 13 yaşından önce okuldan kaçma), suça yönelik davranış (geçen sene içerisinde fiziksel bir kavgaya karışma, silah taşıma ve bir arkadaştan fiziksel zarar görme), yenilik arayışı ve düşük düzeyde depresyon, anksiyete, öfke, dürtüsellik, asertivite eksikliği ve intihar düşüncesi erkekleri kadınlardan ayırt eden özelliklerdi. **Tartışma:** Sonuçlar kadınlarda olasılıkla intihar düşüncesi ile de ilişkili olabilecek öfke, depresyon, anksiyete ve gibi psikolojik problemlerin daha fazla olduğunu; erkeklerde ise okulla ilişkili ve davranışsal sorunların daha yüksek düzeyde bulunduğunu göstermektedir. (Anadolu Psikiyatri Derg 2015; 16(2):77-84)*

Anahtar sözcükler: Ergenlik, davranışsal sorunlar, cinsiyet, online tarama, psikolojik sorunlar

INTRODUCTION

Gender differences in psychiatric symptoms and diagnoses among adolescents are well documented.¹ Several studies have documented that males and females differ in their rates of internalizing and externalizing psychopathology.^{2,3} Adolescent females' internal responses cause them to be vulnerable to internalizing psychopathology, while adolescent males' external responses increase their propensity for externalizing psychopathology.^{4,5} Typically, girls are more vulnerable to internalizing problems such as depression and anxiety.^{6,7} Thus, female adolescents experience depression^{8,9} and anxiety¹⁰ in higher rates than male adolescents. In contrast, males have an elevated risk of externalizing symptoms (e.g., aggression, delinquency, impulsivity and other risk behaviors) after exposure to these same types of stressors.^{5,11-13} During late adolescence and young adulthood, the gender gap in such externalizing behaviors as conduct disorder, delinquency, and aggression widens, with a male-to-female ratio greater than two to one.¹⁴

Previous studies found that sensation-seekers were more prone to get involved in some risk-taking behaviors among late adolescents.^{15,16} Findings on the relationship between risk-taking and sensation-seeking appear to show similar characteristics in Turkey.¹⁷ Among Turkish adolescents, males were more likely to be high sensation-seekers than females, and authors claimed that gender roles and parental attitudes in Turkish culture might simplify the males' sensation-seeking behavior.¹⁸ Thus, Turkish male sensation seekers might be more exposed to be risk-takers.

Peer aggression is common in adolescents and previous research shows males are more likely to be the perpetrators and victim perpetrators of peer aggression.¹⁹⁻²¹ Gender differences were found among school-going adolescents in 20 countries²² and in Portuguese,²³ with boys being more likely to report frequent fighting than girls.

Anatolian Journal of Psychiatry 2015; 16:77-84

In the previous studies conducted with the adolescents, boys reported more physical bullying and victimization,²⁴⁻²⁶ more weapon carrying, and more injury.²⁶ Furthermore, a study of over 160,000 students from 35 countries found that as many as 11% of adolescent girls and 22% of adolescent boys reported carrying guns.²⁷ Research has established linkages between being armed with a weapon and subsequent violence, physical fighting, and injury physical and relational victimization.²⁸⁻³⁰ Nevertheless, changes in gender roles apparently have led adolescent girls to physically fight more frequently than in the past.^{31,32} Also, associations have been found between perpetration and depressive symptoms among girls,³³ but less consistently among boys.³⁴ Overall, 17.25% of adolescents in Guangzhou, China reported suicidal ideation, and 3.04% reported suicidal attempts during the past 12 months. The associations of health risk behaviors with suicidal ideation and attempts varied by gender, and physical fight was associated with suicidal attempts among adolescent males.³⁵

We aimed to determine the gender differences according to psychological and behavioral variables among 10th grade students in Istanbul, Turkey.

METHODS

Settings and sample

In Turkey, elementary education starts at 7 years of age. The first 8 years of elementary education is obligatory (primary school). Students may then attend secondary school. The duration of secondary school education may vary between 3 and 5 years, due to extra years of foreign language education.

The sample size was determined as 5,000 taking into account earlier studies. Frequencies from 1% to 50% are within an acceptable range of accuracy with this sample size (90% power, the estimated accuracy limit of from 1% to 50%±5). Basing on the experience gained from previous

studies, it was estimated that factors such as non-response, improper filling or less number of students than the expected amount would be around 15%, and the total sample size was computed as 5750.

Multi-stage sampling was performed to select subjects. Multi-stage sample initially stratified according to the Istanbul's 15 districts. Tenth-grade students in different geographical areas and different schools, which were selected from the districts and schools included in the previous researches' in Istanbul,³⁶ were enrolled into the study. The primary sampling units were schools, selected with a probability proportional to student enrollment 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 to the system from the Internet and filled the questionnaire. Although none of the patients refused to participate in the study, 410 students were excluded because they left some parts of the scales unfilled, 16 students were excluded because of the trap question. Thus, a representative sample of 4957 students participated in the study. When we compared the students excluded from the study and included in the study, mean of 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.

Measures

The questionnaire administered online in the study was similar with the questionnaire used formerly in Turkey.³⁶⁻³⁸ This questionnaire was adapted and developed from a large international scale used in European school survey known as the European School Survey Project on Alcohol and Other Drugs (ESPAD).³⁹ The questionnaire included sections about demographic data, psychological problems, school life and performance, delinquent and suicidal behaviours. Also the questionnaire included the Psychological Screening Test for Adolescents.

The Psychological Screening Test for Adolescents: The Psychological Screening Test for Adolescents (PSTA)⁴⁰ was developed by adaptation of the Examination and Assessment Form for Juvenile Offenders (ARDEF), which was developed with the purpose of

investigating risk of recidivism and needs of children and adolescents who are in conflict with the law.⁴¹ By shortening the number of ARDEF items PSTA questions were formed for screening purposes. The scale has six subscales; depression, anxiety, anger, sensation seeking, lack of assertivity and impulsivity. The scale has 27 questions with answers 'yes' or 'no'. Impulsivity subscale has three answers 'yes', 'partially' and 'no'. 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 (YSR),⁴² which is a widely used among 6 to 18 years old adolescents for psychological problems, and PSTA total score ($r=0.60$).

Procedure

The study was carried out between October 2012 and December 2012. The study was made online. A website has been prepared for this purpose. The Ethical Committee of the Acibadem University approved the study. A research assistant has been assigned for each school included in the study. Research assistants from 45 schools were given an education for how to participate in the study. The study protocol was thoroughly explained to students by these research assistants. The sample students were asked to fill out the form within the web site. Questionnaires in the system were filled in anonymously. Informed consent was approved by students by clicking the link on the web site. In the online system it is not allowed to leave the questions blank however the student who wishes not to answer the questions were allowed not to answer and leave the program without filling the questionnaire.

Statistical methods

The statistical package SPSS 17.0 for Windows (SPSS, 278 Chicago, IL) was used for all the analyses. Categorical variables were compared by means of the χ^2 statistics. Odds ratios and 95% confidence intervals were calculated. Male gender is coded 1 for males and 0 for females. Taken male gender as a dependent variable, Forward Wald logistic regression model was performed. For all statistical analysis, p values were 2 tailed, and differences were considered significant at $p<0.05$.

RESULTS

Rate of males was 52.7% ($n=2614$). Mean age,

Table 1. Comparing scale scores according to gender

	Cronbach's alpha	Female (n=2343, 47.3%) Mean±SD	Male (n=2614, 52.7%) Mean±SD	t	p
Age		15.43±2.04	15.67±3.24	-3.15	0.002
Depression	0.72	1.61±1.21	1.17±1.14	13.05	<0.001
Anxiety	0.60	2.01±1.26	1.50±1.21	14.65	<0.001
Anger	0.75	2.49±1.52	2.37±1.53	2.85	0.004
Sensation seeking	0.70	2.65±1.73	2.93±1.69	-5.79	<0.001
Lack of assertivity	0.67	4.07±2.15	3.85±2.15	3.45	0.001
Impulsivity	0.65	2.15±1.25	2.03±1.25	3.30	0.001

* other than alcohol and tobacco

Table 2. Comparing variables related with school and behavioural problems

	Female (n=2343) %		Male (n=2614) %		χ^2	p	Odds Ratio (95% CI)
School related variables	143	6.1	242	9.3	17.16	<0.001	1.57 (1.27-1.95)
Poor school success							
Disciplinary punishment*	182	7.8	362	13.8	46.76	<0.001	1.91 (1.58-2.30)
Absenteeism**	139	5.9	298	11.4	45.95	<0.001	2.04 (1.65-2.52)
Truancy before age of 13	390	16.6	1027	39.3	310.31	<0.001	3.24 (2.83-3.71)
Delinquent behaviour							
Physical harm from a friend	206	8.8	408	15.6	52.90	<0.001	2.77 (2.36-3.26)
Physical fight in last year	478	20.4	1204	46.1	362.85	<0.001	3.33 (2.94-3.78)
To bear arms	121	5.2	471	18.0	194.12	<0.001	4.04 (3.28-4.97)
Problem with the law	150	6.4	342	13.1	61.69	<0.001	2.20 (1.80-2.69)
Suicidal thoughts/attempt	406	17.3	254	9.7	62.02	<0.001	0.51 (0.43-0.61)

* other than alcohol and tobacco

sensation seeking and impulsivity scores were higher in males, whereas depression, anxiety, anger and lack of assertivity scores were higher in females (Table 1). Rates of poor school success, disciplinary punishment, absenteeism, truancy before age of 13, physical harm from a friend, physical fight in last year, to bear arms and problem with the law were higher in males, whereas having suicidal ideation or attempt were higher in females (Table 2). Taken male gender as a dependent variable and variables in Table 1 and 2 as independent variables, Forward, Wald logistic regression model was performed. In this logistic regression model, school related problems (poor school success, absenteeism and truancy before age of 13), delinquent behavior (physical fight in last year, to bear arms and physical harm from a friend), sensation seeking, and lower depression, anxiety, anger, impulsivity, lack of assertivity, and suicidal ideation differ-

entiated males from females (Table 3).

DISCUSSION

The main findings of the present study is consistent with the previous ones conducted in different continents and different cultures. The findings suggest that particularly male students have school related and behavioral problems, whereas female students have high risk of psychological problems. In more specific adolescent females' are more vulnerable to internalizing problems such as depression and anxiety,^{4,5-10} whereas males have an elevated risk of externalizing symptoms (e.g., aggression, delinquency, impulsivity and other risk behaviors).^{5,11-14} Consistent with these anxiety, depression, anger and suicidal ideation were higher in females, whereas male gender was related with negative results in school variables, sensation

Table 3. Predictors of male gender in Logistic regression (Forward Wald)

	B	S.E.	Wald	df	p	Odds Ratio	95% C.I.	
							Lower	Upper
Psychological problems								
Depression	-0.288	0.034	70.149	1	<0.001	0.750	0.701	0.802
Anxiety	-0.362	0.034	112.416	1	<0.001	0.696	0.651	0.744
Anger	-0.097	0.028	12.317	1	<0.001	0.908	0.860	0.958
Sensation seeking	0.103	0.022	22.070	1	<0.001	1.108	1.062	1.157
Lack of assertivity	0.091	0.017	28.112	1	<0.001	1.095	1.059	1.133
Impulsivity	-0.113	0.029	15.592	1	<0.001	0.893	0.844	0.945
School related variables								
Poor school success	-0.631	0.130	23.506	1	<0.001	0.532	0.413	0.687
Absenteeism	-0.461	0.128	12.865	1	<0.001	0.631	0.490	0.811
Truancy before age of 13	-1.004	0.081	152.808	1	<0.001	0.366	0.312	0.430
Delinquent behaviour								
Physical harm from a friend	-0.461	0.114	16.431	1	<0.001	0.631	0.505	0.788
Physical fight in last year	-1.159	0.082	198.258	1	<0.001	0.314	0.267	0.369
To bear arms	-1.068	0.129	68.529	1	<0.001	0.344	0.267	0.443
Suicidal thoughts/attempt	1.035	0.114	81.796	1	<0.001	2.815	2.249	3.523
Nagelkerke R ² =0.295								

seeking and delinquent behavior.

Fagan et al.⁴³ found that males' experiences higher levels of academic failure than females. Similarly the results of an international study from 12 countries indicated that, compared to boys, girls reported higher levels of engagement in school and were rated higher by their teachers in academic performance.⁴⁴ Consistent with these, male gender was related with poor school success, disciplinary punishment, absenteeism and truancy before age of 13 in the present study. Gender differences were found in 20 countries, with boys being more likely to report frequent fighting than girls.²² Among Portuguese school-going adolescents 33.8% engaged in a physical fight during the previous 12 months and rates of physical fight among boys (48.6%) was higher than girls (20.1%).²³ These findings and the rates are consistent with the present study. Previous researches show that males are more likely to be the involved in peer aggression,¹⁹⁻²⁶ weapon carrying, and more injury.^{26,27} Researches have also established linkages between being armed with a weapon and subsequent violence, physical fighting and injury.²⁷⁻²⁹ Consistent with these delinquent behaviours, such as physical harm from a friend, physical fight in last year, to bear arms and problem with the law, were more prevalent among males. The male gender predicts risk behaviors in Turkish adolescents.^{45,46} Due to the traditional social

norms⁴⁷ and strict control over female adolescents in Turkish families, female adolescents seem to have less freedom to get involved in risk-taking behaviors.⁴⁶ In a study of 7,829 10th grade adolescents, Fagan et al.⁴² found boys experience higher exposure to multiple risks associated with later delinquency than females. Specifically, males' experiences included higher levels of peer delinquency and rebelliousness, among other risk factors.

Sensation seeking is the pursuit of 'varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences'.⁴⁸ Individuals high in sensation seeking have difficulty delaying the gratification of immediate novelty experience and tend to have lower general self-control.⁴⁹ Among Turkish adolescents, males were more likely to be high sensation-seekers than females, and authors claimed that gender roles and parental attitudes in Turkish culture might simplify the males' sensation-seeking behavior.¹⁷ Previous studies found that sensation-seeking is related with risk-taking behaviors among adolescents.¹⁵⁻¹⁷ In a cross-sectional study with 237 students in the 9th grade of middle school from public schools, males had higher statistically significant self-esteem scores when compared to females.⁵⁰ These two findings in previous studies are consistent with the present study that sensation

seeking and assertiveness predicted male gender.

In middle-school students in in South Korea, girls reported significantly higher scores in both anger and suicidal ideation.⁵¹ In a cross-sectional school-based survey conducted in Jamaica found that being female predicted the suicidal ideation.⁵² In the present study the prevalence of the suicidal ideation was higher for girls (17.3%) than for boys (9.7%), percentages and differences are in accordance with the literature (9-10%).⁵²⁻⁵³ There are even higher rates such found in a Korean study, but still rate was higher in girls (27.9%) than boys (19.1%).⁵⁴

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 the compliance with our culture are needed. Methodology was the strongest point of the present study, as it employed 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.⁵⁵ 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.

The findings suggest that particularly male students have school related and behavioral problems, whereas female students have high risk of psychological problems. Overall, the results of this study support the view that females are more vulnerable to internalizing problems such as depression and anxiety, whereas males have an elevated risk of externalizing symptoms in adolescents. These findings may serve as a forewarning to school counselors and public health authorities that health promotion programs should simultaneously address multiple risk behaviors and psychological characteristics of the students and take into account gender differences. The results of this survey highlight the importance of an awareness of gender differences according to school related variables, psychological and behavioral problems to prevent and manage these problems.

Acknowledgement

This study was part of a Project called as Youth Observation Study (GENCIZ) in Turkey, which through its web site allows surveys for high school and university students from different cities.

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