

The Relationship of Self-Concept and Smoking Behavior in Adolescents

Ergenlerde Sigara İçme Davranışı ve Özkavramın İlişkisi

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ABSTRACT

Objective: The main purpose of the study was to explore the effect of subscale analysis of self-concept as a rare investigated concept in the subject of cigarette smoking in adolescents (ranging from 8th to 11th grades). We also aimed to reveal the factors affecting smoking behavior and identify a possible correlation between smoking behavior and self-concept.

Methods: Multi-step, stratified, cluster sampling were used to determine the study group. A stratified sample of 3352 adolescents was randomly selected and data was obtained. A pair of structured questionnaires was designed to evaluate the presence of smoking and the level of self-esteem in adolescents. The Piers-Harris Self-Concept Scale (PHSC) was used to assess adolescent self-concept. Subscale analysis was made in the six basic areas of self-concept and the required statistical analysis was carried out.

Results: We showed that 16.1% of adolescents are current smokers with a male predominance. The subscales, except for physical appearance, and attributes subscales were significantly lower in current smokers compared to non smokers. In addition, there were positive correlations between current smokers and anxiety ($r=.167, p<.01$), and popularity ($r=.117, p<.01$) according to linear trend analysis.

Conclusions: These results suggest that strategies that influence smoking behavior need to be directed not only to the individual child but also to influences within the child's home and school environment. In conclusion, knowing the basic determinates of self esteem in smoker adolescents is essential for improvement in coping strategies both of the country and worldwide. (*Archives of Neuropsychiatry 2007; 44: 145-51*)

Key words: Self-esteem, cigarette smoking, prevalence, high-school, adolescents

ÖZET

Amaç: Bu çalışmanın amaçları sigara içen ergenlerde, az olarak çalışılan bir alan olan, özkavram alt ölçekleri ile sigara içme arasındaki ilişkiyi belirlemek (8-11. sınıflar), sigara içme ile özkavram arasındaki olası korelasyonları saptamaktır.

Yöntem: Çalışma grubunun belirlenmesinde çok aşamalı, tabakalı, küme örnekleme yöntemi kullanıldı. Örneklemimizi oluşturan 3352 ergen randomize olarak seçildi, sigara ile ilgili değişkenler ve özkavram düzeylerini belirleyen anketler yapılandırılmış 2 ayrı form olarak uygulandı. Ergenlerin özgüvenlerini değerlendirmek için Piers-Harris Öz-kavram Ölçeği kullanıldı. 6 altölçek kullanılarak analizler yapıldı.

Bulgular: Erkeklerde daha çok olmak üzere ergenlerin %16.1' i sigara içiyordu. Fiziksel görünüm haricindeki altölçeklerin hepsi sigara içenlerde, sigara içmeyenlere göre daha düşüktü. Lineer trend analizine göre sigara içme ile anksiyete ($r=.167, p<.01$) ve popülerite ($r=.117, p<.01$) altölçekleri arasında pozitif ilişki vardı.

Sonuç: Bulgular sigara içme davranışında çocuğun sadece kendisinin değil ev ortamı ve okul çevresinin de dikkate alınması gerektiğini göstermektedir. Dünyada sigara içme davranışı olan ergenlerde başa çıkma stratejilerinin belirlenmesi önemli bir konudur. (*Nöropsikiyatri Arşivi 2007; 44: 145-51*)

Anahtar Kelimeler: Özkavram, sigara içme, yaygınlık, lise, ergen

Introduction

Adolescent tobacco use is a well-known public health problem with harmful health consequences. While data on global tobacco use behavior are limited, it appears that in many developed countries, the vast majority of smokers begin using tobacco products well before the age of 18 years (1,2). The reduction seen in adults, however, has not been noted in adolescents, particularly young females (3). Between one third

and one half of adolescents who try smoking even just a few cigarettes soon become regular smokers (4-6).

Numerous studies have also investigated tobacco use among school children in Turkey and they that showed an increasing proportion of Turkish children and adolescents are exposed to smoke tobacco since smoking prevalence in Turkey has increased rapidly, especially among men, during the last decades (e.g. 7%, 17%, 18%, 40%, 60%) (7-10). Ogel et al. reported that the prevalence of tobacco use at least once in a life time was 16.1%

in elementary school and 55.9% in secondary school (11). Another study in Turkey indicated that the prevalence of tobacco use at least once was 63% between 15-17 years of age (12).

It is known that adolescent smoking is a complex behavior. Kim et al indicated that adolescent smoking may result from peer group pressures, family situations, school problems, and, more importantly, their own psychological dispositions (2,13). In this regard, a large volume of studies in the area of behavioral sciences has argued that smoking behavior of adolescents may be caused by negative psychological propensity, such as low self-esteem and self-efficacy and loss of ability to control health (13,14). The studies explained that nicotine may have direct pharmacological effects that moderate stress, and smoking has been cited as a means of dealing with stress among young smokers (15). Various scales can measure self-concept, one of which is the Piers-Harris Self-Concept Scale (PHSCS). Although previous reports in the literature showed that self-concept is an important risk factor for smoking behaviour in adolescents, PHSCS and subscales of PHSCS were not used to assess adolescents with smoking behaviour (16). However, PHSCS and subscales have been used to assess self-concept in some research (e.g., cleft lip and/or palate, congenital heart disease, enuresis) (17-19).

The main purpose of the study was to explore the effect of subscale analysis of self-concept, as a rare investigated concept in the area of cigarette smoking, of Turkish adolescents (ranging from 8th to 11th grades). We aimed to reveal the factors affecting smoking behavior and to identify a possible correlation between smoking behavior and self-concept. We also aimed to contribute some additional dynamic explorations into cigarette smoking behavior.

Method

Subjects and study procedures

Estimation of sample size:

This study was conducted in Mersin which is a city located on the Mediterranean coast of Turkey. Its population is 759,785 and it is the tenth largest city in the country. Commercially it is an important port city and it is economically well developed. There are 67,000 school children aged between 13-21 attending high school according to the 2003 statistical data.

A school-based cross-sectional and selective (ranging from 8th to 11th grades) study was performed in 2005. It was estimated that to reach a reliability of 99%, 3000 children had to be chosen and included in the study for a total sample size of 67000. The study sample was composed of 3352 children from 55 high schools. This sample represented 5.5% of all secondary and high school children in Mersin (selected 67,000 children) with 99% confidence. From this a systematic random sample of 55 high schools was made with EP16 INFO program. Also randomization was weightier according to gender and to each stratum (good, satisfactory, poor) of the population.

During the data quality control process, 48 adolescents were excluded from the study because of missing or unreadable answers. As a result, 3304 children (92.1% of study sample) were analyzed in this study.

Selection of Subjects

Multi-step, stratified, and cluster sampling were used. In the first phase, participants in this study were students from 55 high-schools and were randomly selected, and located in urban, semi rural, and rural communities in Mersin. The study population consisted of 3,352 students from 22 out of 55 high schools in the city. In the second phase, classes were randomly selected according to the number of students in that particular school.

Study Procedures

A school-based, cross-sectional study was performed. During the in-school time, all children were given a detailed structured questionnaire and Piers-Harris Children's Self-Concept (PCSC). We used PCSC because of it has been used in main researches for assessing children's self-concept. This questionnaire included the demographic variables (e.g., age, education, family size, age of parents, occupation of parents, education of parents), the risk factors for smoking (e.g. school failure, losing loved ones, moving to another city, break-up of a romantic relationship), and smoking behavior both of the adolescent and other family members.

Our primary outcome measures were responses to questions regarding regular or rare positive tobacco smoking of the students. To assess environmental tobacco smoke exposure, we asked the student to list all household members and indicate whether each person currently smoked. Personal smoking was considered in the analysis if the response was current daily or non daily smokers.

Measure of Smoking Status

Smoking behavior was defined as follows: Never smokers, past smokers (those who smoked in the past, but not in the past 30 days), current (past 30 days) non daily smokers, and current (past 30 days) daily smokers. Current smoker were asked to give the number of daily consumption. A final category, current smokers, combined both current non daily and daily smokers. We also evaluated the number of subjects reported who had tried smoking (lifetime smoking) in addition to the factors affecting the status of current smoking or past smoking.

Measures of Piers-Harris Children's Self-Concept (PCSC)

Children completed the Piers-Harris Self-Concept Scale, an 80-item questionnaire, which is a quantitative self-report measure of children's self-concepts. The test has been standardized for use beyond grade 3 reading level. Answers are categorical. Cluster scales are included for the domains of behavior-(PH1), intellectual and school status-(PH2), physical appearance and attributes-(PH3), anxiety-(PH4), popularity-(PH5), and happiness and satisfaction-(PH6). PCSC was approved regarding reliability and validity by Turkish Health Ministry 20,21.

Statistical Analysis

General statistical analyses were performed with SPSS 11.0 software (SPSS Inc. Chicago, IL, USA). The results of descriptive analyses were tested and found to show normal distribution, thus data are given as the means and standard deviations. Differences of socio-demographic factors among the groups according to smoking behaviour were compared using appropriate statistical methods. Additionally linear trend analysis has been made in non-parametric variables by chi-square for trend test and in parametric variables by Kruskal Wallis analysis. In order to evaluate separate relationships, Pearson chi-square tests were

also carried out. Binary logistic regression analysis was used with Forward LR variable selection method. Odds ratio (OR) with a 95% confidence interval (CI) were calculated from logistic regression models. Two-tailed tests were considered significant at the 5% level.

Results

In our study sample, 533 (16.1%) out of 3,304 adolescents were determined as current smokers according to daily and non daily smokers in the previous 30 days. Out of the total number of current smoker adolescents, 411 (77.1%) were boys and 122 (22.9%) were girls, which represented a statistically significant difference ($p=.000$). As shown in Table 1, the average age of adolescents in current smokers was significantly higher than in non smokers ($p=.000$). The number of current smokers was significantly higher in trade schools than others ($p=.000$). Decreased grades the previous year, problems with friends at school, the number of discipline punishment, being beaten in home, having a physical disease, skipping a grade, suicide attempt, the number of psychiatric interventions, the mean of notes the previous year, earning own pocket money, break-up of a romantic relationship, the number of siblings, having skipped a day the previous year were much more frequent in current smokers than non smokers (Table 1).

It was found that the following environmental factors had significant effects on the smoking habits in adolescents: The increasing age of fathers, the increasing age of mothers, the mean number of family member, divorced parents, hospitalization of parents in the previous year, problems with parents, discordance between parents, the number of immigrations during the previous year, the mean education of fathers (years), the number of stepmothers, the number of stepfathers, living with the family, traffic accident of a member of family in the last year (Table 2).

Table 3 shows the result of differences in the total score of PCSC and PCSC subscales in the subjects. The subscales, except for physical appearance and attributes subscales, were significantly lower in current smokers compared to non smokers. In addition, there are positive correlations between current smokers and anxiety ($r=.167, p<.01$) and popularity ($r=.117, p<.01$) according to linear trend analysis.

The results of binary logistic regression analysis for PCSC and subscales of PCSC in the current smokers are shown in Table 4a and 4b. Associated stuttering has an important effect on all subscales of self-esteem in current smokers. Among the personal and environmental factors, having a stepfather (OR=-2.82), bad family relationship (OR=1.12) and having an unemployed mother were the factors with most effect on the happiness and satisfaction scores of current smokers. Having

Table 1. Socio-demographic variables of study sample

Variables	Current smoker (n=533)	Non-smoker (n=2771)	p
Age	16.64±1.18	15.92±1.17	.000*
Sex (n, %)			
Girls	122 (22.9%)	1269 (45.8%)	
Boys	411 (77.1%)	1502 (54.2%)	.000*
Stratified distribution of classes			
Preparing class	17 (3.2%)	363 (13.1%)	
9th grade	185 (34.7%)	1085 (39.2%)	
10th grade	150 (28.1%)	693 (25.0%)	
11th grade	181 (34%)	630 (22.7%)	.000*
Type of high school			
Government school	134 (25.1%)	815 (29.4%)	
Trade school	266 (49.9%)	852 (30.7%)	
Special government school	101 (18.9%)	969 (35%)	
Private school	32 (6%)	135 (4.9%)	.000*
Decreased grade in the last year	369 (70.2%)	1659 (60.7%)	.000*
Problems with friends at school	194 (37%)	758 (27.7%)	.000*
The number of discipline punishment	97 (19.7%)	180 (6.9%)	.000*
To get a beating in home	157 (30%)	425 (15.6%)	.000*
Having physical disease	42 (8.1%)	117 (4.3%)	.000*
Skipped a grade	126 (24.3%)	299 (10.9%)	.000*
Suicide attempt	123 (23.1%)	224 (8.1%)	.000*
The number of psychiatric intervention	87 (16.7%)	242 (8.8%)	.000*
To earn own pocket money	332 (63.2%)	1011 (36.8%)	.000*
Break-up of a romantic relationship	369 (70.2%)	1328 (49%)	.000*
Number of siblings	3.45±2.223	3.2±2.168	.014*
The mean of notes last year	3.443±.7649	3.888±.7697	.000*
Skipped a day last year	11.06 ±11.135	5.67±7.411	.000*

*: statistically significant difference

a step mothers (OR=2.03) or fathers (OR=1.85) and having a smoker family members (OR=1.04) have important effect on anxiety of smoker subjects. On the other hand, popularity was important in boys (OR=-.831), and disciplinary punishment in school (OR=.852) was the most important effect in domains of behavior, not having any hobby (OR=-.860) in the physical appearance and attributes subscale and having a stepmother (OR=-.1.282) was the most important factor in the low intellectual and school performances of current smoker subjects.

Discussion

In this study we investigated a large group of high school students using a multistep, stratified cluster sampling method and using a subscale analysis of self-esteem as a rarely studied data and we found an important degree of low esteem in current smoker subjects with a male predominance. To our knowledge, this is the first study dealing with the relationship between smoking and self esteem determinates and using a broad epidemiological adolescent sample.

In our study, the rate of current smokers was found to be 16.1%, with current smoking defined as having smoked on one or more days in the previous 30 days. This result is in accordance with other studies using the same definition for current smoker. It was reported that the overall median rate for current cigarette smoking was 13.9% (1). Erbaydar et al. reported that alltime and current smoking rates were 41.1% and 10.5% among girls, and 57.5% and 25.2% among boys (22). Previous studies in the US have generally shown that the prevalence of current cigarette use increased from 27.5% in 1991 to 36.4% in 1997 and then declined significantly to 21.9% in 2003. A significant quadratic trend was detected for current frequent cigarette use; the prevalence increased from 12.7% in 1991 to 16.7% in 1997 and 16.8% in 1999 then declined significantly to 9.7% in 2003 (23). The rate of current smokers found in our study is approximately similar to that reported in some studies in the US and other countries with a student population of similar age and the same definition for current smokers (6,22-24).

Most of the available data on psychosocial variables that influence substance use (e.g. alcohol, cigarette) in adolescents

Table 2. Socio-demographic variables of environmental factors

Variables	Current smoker (n=533) n, %	Non-smoker (n=2771) n,%	p
Mean age of mothers (mean±SD)	41.74±6.446	40.61±5.662	.000*
Mean education of mothers (mean±SD)	6.04±4.483	6.29±4.212	.210
Mean age of fathers (mean±SD)	46.06±6.363	45.17±6.187	.003*
Mean education of fathers (mean±SD)	7.85±3.96	8.44±3.982	.002*
Unemployed mothers (n, %)	425 (80.8%)	2312 (84.1%)	.058
Unemployed father (n, %)	93 (18.6%)	412 (15.6%)	.089
Family member (mean±SD)	5.4±2.530	5.19±2.069	.035*
Step mother (n, %)	9 (1.7%)	6 (.2%)	.000*
Step father (n,%)	8 (1.6%)	13(.5%)	.005*
Maternal death (n,%)	7 (1.3%)	23 (.8%)	.281
Paternal death (n,%)	33 (6.2%)	123 (4.4%)	.081
Divorced parents (n,%)	71 (13.5%)	191 (7%)	.000*
Living with family (n,%)	487 (91.5%)	2619 (95.1%)	.001*
Hospitalization of parents last year (n,%)	212 (40.5%)	812 (29.9%)	.000*
Having traffic accident of a member of family in last year (n,%)	185 (35.2%)	745 (27.4%)	.000*
Problems with parents (n,%)	265 (50.3%)	615 (22.5%)	.000*
Discordance between parents (n,%)	176 (33.6%)	475 (17.5%)	.000*
The number of immigration last year (n,%)	110 (20.95%)	365 (13.4%)	.000*

*: statistically significant difference

Table 3. The relationship between smoking and self-esteem

Piers-Harris Children's Self-Concept (PCSC)	Current smoker n=533	Non-smoker n=2771	p
The mean of total score	49.81±10.11	55.01±10.2	.000*
The mean score of subscales			
Domains of behavior	8.99±3.01	10.99±2.68	.000*
Intellectual and school status	4.18±1.69	4.47±1.61	.000*
Physical appearance and attributes	6.32±2.33	6.47±2.30	.164
Anxiety	6.63±2.63	7.06±2.80	.001*
Popularity and satisfaction	8.62±2.11	8.9±2.10	.005*
Happiness and satisfaction	7.41 ±3.14	8.83±3.18	.000*

*: statistically significant difference

originate from Western countries. However, prevalence and pattern of substance use vary markedly between different societies due to cultural, ethnic and religious differences (10). Because of this, adolescent smoking is a complex behavior. Previous community studies have reported that adolescent smoking was associated with age, sex, family structure, parental socioeconomic status, income, parental attitudes, peer attitudes and norms, family environment, attachment to family and friends, school factors, risk behaviors, lifestyle, stress, depression/distress, self-esteem, attitudes, level of irritability and health concerns (3,25,26). Conwell et al indicated that cigarette smoking status is associated with externalizing and internalizing behaviour problems, school suspension, poor school performance, marital conflict, maternal depression and lower income (27). We also observed the significant effects of these factors with different ratios.

In the current study, consistent with other reports, boys (77.1%) had a higher smoking rate compared with girls (22.9%). Smoking among adolescents is a developmental phenomenon with several factors exerting an influence on cigarette use at different times. In other respects, the differences in smoking behavior by gender can be understood within a social context. Although Turkish society has changed and become westernized in recent years, it tends to be considerably conservative in certain sectors of society. Such conservative tendencies resulted from the traditional Confucian idea that has been rooted in national life. Therefore, it might be possible to postulate that the social climate in Turkey has been against females smoking, but tolerant of male smoking (10,28,29).

The present study showed that most of the factors both of the personal and environmental factors (family, friends and school variables) had important effects on smoking in Turkish adolescents. Some studies also suggest that smoking and alcohol use are associated with low academic performance (30,31). In this study, low academic performance is a highly important risk factor for both smoking and other substance use.

Mersin is a city located on the Mediterranean coast of Turkey, and has one of the biggest commercial harbours. Mersin receives a considerable number of immigrants from different parts of Turkey, particularly from the less developed eastern and south-eastern regions. The annual population growth rate is about 26%, and the total fertility rate is 2.38 in the province. Nearly half of the population is under 25 years of age. The rate of unemployment is 10.2% in Mersin. Eighty-nine percent of the population is literate and a significant difference in literacy is observed between sexes (94% for males, 84% for females). Ten percent of the male population has a university education; the corresponding figure for females is 5.3%. There are about 82,000 children aged 10-20 years attending secondary or high school (10). Diler and Avci showed that migrant children had significantly lower self-esteem scores in comparison to non-migrant children. It has also been reported that immigrant children had lower academic success than non-migrants (32,33). Although adult and parent feedback remain essential to the process of self-understanding, self-esteem regulation depends upon feedback from peer groups and close friends. Thus self-esteem may be

Table 4a. The significant variables on first two subscales of PCSC using binary logistic regression analysis in the current smokers

Subscales	Variables	Exp B	p	95% CI	
				Lower	Upper
Happiness and satisfaction	Low academic performances	0.483	0.013	0.104	0.861
	Unemployed mother	-0.993	0.006	-1.695	-0.290
	Having a step father	-2.820	0.010	-4.970	-0.676
	Associated stuttering	0.720	0.012	0.158	1.287
	Parents' employment problems	0.673	0.031	0.062	1.284
	Bad parent relationships	1.125	0.000	0.551	1.698
	Not having a close friend	-0.895	0.001	-1.433	-0.357
	Not having any hobby	-0.749	0.019	-1.374	-0.123
	Having some sleep problems	0.624	0.020	0.100	1.148
Anxiety	Average age	0.212	0.036	0.014	0.410
	Female gender	0.686	0.021	0.105	1.267
	Low academic performances	0.537	0.001	0.216	0.858
	Having a step mother	-2.038	0.016	-3.700	-0.375
	Unemployed mother	-0.770	0.011	-1.366	-0.174
	Having a step father	-1.858	0.046	-3.679	-0.037
	Smoking of fathers	-0.885	0.023	-1.648	-0.122
	At least one family members smoking	-1.044	0.040	0.050	2.037
	Associated stuttering	0.683	0.005	0.204	1.162
	Break-up of a romantic relationship	0.581	0.020	0.093	1.070
	Having own pocket money	-0.786	0.003	-1.294	-0.277
	Having some fear	0.551	0.019	0.090	1.011

impaired in migrant children (4). Consistent with these reports, we observed that migration is an easy way both to having lower self-esteem and smoking habit.

The young population is especially in need of study as adolescent cigarette smokers have disproportionately high rates of co-occurring psychiatric problems. Most importantly, in the absence of intervention, adolescent smokers with psychiatric disorders are likely to become highly dependent (34). The use of smoking for dealing with stress is not unexpected as nicotine may have direct pharmacological effects that moderate stress (15). In fact, smoking has been cited as a means of dealing with stress among young smokers (35) as well as among adults. Wills and Shiffman noted that smoking was consistently reported to be a coping mechanism (36,37). And also, it was reported that having depression was a significant psychosocial risk factors for alltime smoking (38,39). Forgays et al also found trait anxiety and anger to be significantly associated with the smoking status (40). Our study, using the subscales of self esteem, determined the important effects of low scores of domains of behavior, intellectual and school status, popularity and satisfaction factors and also happiness and satisfaction had important effects on adolescent smoking behavior. We also observed that a high level of anxiety negatively effects the self esteem with different socio-demographic and psychological determinates.

According to the World Health Organization, self-esteem, self-image and tobacco use are directly linked. Adolescents who smoke tend to have low self-esteem, and low expectations for future achievement. Often they see smoking as a way to cope with the feelings of stress, anxiety and depression that stem from a lack of self-confidence. Surrounded by a culture that supports such beliefs, some teenage girls may see cigarettes as a way to attain these goals. Based on the results of previous studies, it is possible that adolescent with lack of self-confidence and self-

esteem have health problems (e.g. tobacco use, alcohol and drugs). In other studies, similiar results showed that higher self-esteem apparently appears to be protective against smoking (41).

In a detailed, important study, Glendinning reported that social isolation had been associated with low self-esteem mid adolescence, but not with increasing smoking, and yet an earlier sense of isolation was subsequently linked to the smoking behaviour of this age (41). Fraizer et al found that smokers had higher social self-esteem scores than did nonusers. Girls with high social self-esteem were 50% more likely to smokethan were girls with low social self-esteem. Boys with high social self-esteem were nearly twice as likely to report smoking as boys with low social self-esteem. Global and scholastic self-esteem scores were not related to smoking in logistic regression models in either girls or boys (42). Our detailed epidemiological study supported the mentioned hypothesis, adding some informative data about determinates of self esteem in these subjects. Our study also showed that stuttering can be important as a physical handicap for adolescents.

Our results suggest that there is a significant association between lower self-esteem and smoking habit in compliance with other community studies. In addition there are positive correlations between current smokers and anxiety and popularity. Although there is a gap in the literature about smoking behavior and subscales of PHSC, the present findings showed that some variables are important risk factors for having lower subscales of PHSC. As a result, the findings of our study point to underlying processes within lower self-esteem and some variables. The score of subscales of intellectual, anxiety, popularity and satisfaction were significantly lower in smokers. When children enter the transition to elementary school, they experience a change from being a home child to being a school child. Children in middle and late childhood particularly benefit from this transition,

Table 4b. The significant variables on last four subscales of Piers-Harris Children's Self-Concept using binary logistic regression analysis in the current smokers

Subscales	Variables	Exp B	p	95% CI	
				Lower	Upper
Popularity	Average age	0.186	0.034	0.014	0.358
	Female gender	-0.831	0.001	-1.335	-0.326
	Associated stuttering	0.461	0.030	0.045	0.876
	Discordance with friends	0.481	0.022	0.071	0.891
Domains of behavior	Associated stuttering	0.555	0.042	0.019	1.091
	Discordance with parents	0.740	0.008	0.195	1.285
	Vigilance behavior	0.771	0.003	0.265	1.278
	Discipline punishment in school	0.852	0.008	0.219	1.484
	Other substance abuse	0.765	0.004	0.239	1.291
Physical appearance and attributes	Decreased mothers education time	0.411	0.027	0.048	0.773
	Associated stuttering	0.667	0.005	0.205	1.128
	Not having any hobby	-0.860	0.001	-1.372	-0.349
	Having some sleep problems	0.453	0.038	0.024	0.881
Intellectual and school performance	Having a step mother	-1.282	0.032	-2.455	-0.109
	Associated stuttering	0.502	0.004	0.165	0.840
	Traffic accident history of family	-0.379	0.028	-0.717	-0.041
	Not having any hobby	-0.612	0.001	-0.987	-0.238
	Divorced parents	-0.618	0.010	-1.088	-0.149

as school as a new life outside the home helps them to develop a new sense of self. Peer relationship, interactions with teachers, and achievement orientation compromise this new sense of self (18).

Limitations

The findings in this report are subject to at least three limitations. First, these data apply only to youths aged 15-21 years who attended high-school and, therefore, are not representative of all persons in this age group. Second, these data apply only to youths who were in school on the day of survey administration. Third, the data are all based on self reports, possibly leading to under or over reporting of behavior.

Conclusions

This study provides significant information on self-esteem related to Turkish adolescent smoking using rarely studied self esteem determinates. In the perspective of exploratory research, it is important to share results because there are very limited studies on the relationships between smoking behavior and self-esteem. Furthermore, this survey revealed that smoking prevalence among Turkish high school students has already reached quite high levels although there is a no smoker-free regimen school in Turkey. This study provides some insights into the development of coping strategies such as the positive effect of good family relationships and having some youthful hobbies on smoking behavior. In conclusion, knowing the basic determinates of self esteem in smoker adolescents is essential to the improvement of coping strategies both of the country and worldwide.

References

1. Warren CW. The Global Youth Tobacco Survey Collaborative Group. Tobacco use among youth: a cross country comparison. *Tobacco Control* 2002;11: 82-3.
2. Kim YH. Adolescents' perceptions with regard to health risks, health profile and the relationship of these variables to a psychological factor-A study across gender and different cultural settings. Unpublished PhD thesis, University of Wollongong, Australia (1998).
3. Tyas SL, Pederson LL. Psychosocial factors related to adolescent smoking: a critical review of the literature *Tob Control* 1998; 7: 409-20.
4. Verkuyten M. General self-esteem of adolescents from ethnic minorities in the Netherlands and reflected appraisal process. *Adolescence* 1988; 23: 863-71.
5. Houston T, Kolbe LJ, Eriksen MP. Tobacco-use cessation in the '90s-not "adults only" anymore. *Prev Med* 1998; 27(5 Pt 3):A1-2.
6. Johnson LD, O'Malley PM, Bachman JG: The monitoring of the future national survey results on adolescent drug use: overview of key findings, 2001. Bethesda, MD: National Institute on Drug Abuse, NHI Publication No. 02-5105; 2002.
7. Pekşen Y. Sigara içiminin nedenleri, epidemiyolojisi, pasif içicilik. In: Tür A ed. Sigaranın Sağlığa Etkileri ve Bırakma yöntemleri. Logos Yayıncılık 1995: 29-53.
8. Önder R, Egemen A. Lise çağı gençliğinin sigara içme durumu. *Türk Hij Den Biyol Derg* 1987; 44: 121-6.
9. Tümerdem Y, Ayhan B, Emekli U ve ark. İstanbul kentinde öğrenim gençliğinde sigara içme olayı etkinliklerinin araştırılması. *Solunum II* 1986; 412-6.
10. Tot S, Yazıcı K, Yazıcı A, Metin O, Bal N, Erdem P. Psychosocial correlates of substance use among adolescents in Mersin, Turkey. *Public Health* 2004; 118: 588-93.
11. Ogel K, Corapcioglu A, Sir A, Tamar M, Tot S, Dogan O, Uguz S, Yenilmez C, Bilici M, Tamar D, Liman O. Tobacco, alcohol and substance use prevalence among elementary and secondary school students in nine cities of Turkey. *Türk Psikiyatri Derg* 2004; 15: 112-8.
12. Ogel K, Tamar D, Çorapcioglu A et al. Lise gençleri arasında tütün, alkol ve madde kullanım yaygınlığı. *Türk Psikiyatri Dergisi* 2001;12: 47-52.
13. Kim YH. Korean adolescents' smoking behavior and its correlation with psychological variables, *Addictive Behaviors* 2005; 30: 343-50.
14. Hurrelmann K. Health promotion for adolescents: preventive and corrective strategies against problem behavior. *J Adolesc* 1990;13: 231-50.
15. Leventhal H, Cleary PD. The smoking problem: a review of research and theory. *Psychol Bull* 1980; 88: 370-405.
16. Piers E, Harris D. The Piers-Harris Children's Self-Concept Scale. Nashville, TN: Counsellor Recordings and Tests; 1969
17. Leonard BJ, Brust JD, Abrahams G, Sielaff B. Self-concept of children and adolescents with cleft lip and/or palate. *Cleft Palate Craniofac J* 1991; 28: 347-53.
18. Chen CW, Li CY, Wang JK. Self-concept: comparison between school-aged children with congenital heart disease and normal school-aged children. *J Clin Nurs* 2005; 14: 394-402.
19. Longstaffe S, Moffatt ME, Whalen JC. Behavioral and self-concept changes after six months of enuresis treatment: a randomized, controlled trial. *Pediatrics* 2000; 105(4Pt 2): 935-40.
20. Oner R. Piers-Harris'in çocuklar için öz kavram ölçeği elkitabı Ankara: Türk Psikologlar Derneği Yayınları, 1996
21. Piers EV, Manual for the Piers-Harris Children's Self-Concept Scales. Acklen, TN: The Western Psychological Services, 1984.
22. Erbaydar T, Lawrence S, Dagli E, Hayran O, Collishaw NE. Influence of social environment in smoking among adolescents in Turkey. *Eur J Public Health*. 2005; 15: 404-10.
23. Cigarette Use Among High School Students- United States, 1991-2003. *June, 2004/ 53: 499-502.*
24. Courtois R, El-Hage W, Moussiessi T, Mullet E. Prevalence of alcohol, drug use and psychoactive substance consumption in samples of French and Congolese high school students. *Trop Doct*. 2004; 34: 15-7.
25. Conrad KM, Flay BR, Hill D. Why children start smoking cigarettes: predictors of onset. *British Journal of Addiction*. 1992; 87: 1711-24.
26. Caris L, Varas M, Anthony CB, Anthony JC. Behavioral problems and tobacco use among adolescents in Chile. *Rev Panam Salud Publica*. 2003;14: 84-90.
27. Conwell LS, O'Callaghan MJ, Andersen MJ, Bor W, Najman JM, Williams GM. Early adolescent smoking and a web of personal and social disadvantage. *J Paediatr Child Health*. 2003; 39: 580-5.
28. Erdoğan İ. Popüler Kültürde Gasp ve Popülerin Gayri Meşruluğu. *Doğu Batı*, 2001; 15: 65-106.
29. Acar F, 1998. Kadınların İnsan Hakları: Uluslar arası Yükümlülükler. O Çiftçi (ed.) XX. yüzyılın sonunda Kadınlar ve Gelecek. Türkiye ve Orta Doğu Amme İdaresi Enstitüsü İnsan Hakları Araştırma ve Derleme Merkezi Yayın No: 16. 23-31.
30. Hops H, Tildesley E, Lichtenstein E, Ary D, Sherman L. Parent-adolescent problem-solving interactions and drug use. *Am J Drug Alcohol Abuse* 1990; 16: 239-58.
31. Wood MD, Sher KJ, McGowan AK. Collegiate alcohol involvement and role attainment in early adulthood: findings from a prospective high-risk study. *J Stud Alcohol* 2000; 61: 278-89.
32. Diler RS, Avcı A. Emotional and behavioral problems in migrant children. *Swiss Med Wkly* 2003; 133: 16-21.
33. Hatun Ş, Etiler N, Gönüllü E. Yoksulluk ve çocuklar üzerine etkileri. *Çocuk Sağlığı ve Hastalıkları Dergisi*. 2003; 46: 251-60.
34. Brown RA, Ramsey SE, Strong DR, Myers MG, Kahler CW, Lejuez CW, et al. Effects of motivational interviewing on smoking cessation in adolescents with psychiatric disorders *Tob Control*. 2003;12 (Suppl 4):IV3-10.
35. Mates D, Allison KR. Sources of stress and coping responses of high school students. *Adolescence* 1992; 27: 461-74.
36. Pearlin LI, Schooler C. The structure of coping. *J Health Soc Behav* 1978; 19: 2-21.
37. Patten CA, Lopez K, Thomas JL, Offord KP, Decker PA, Pingree S, et al. Reported willingness among adolescent nonsmokers to help parents, peers, and others to stop smoking. *Preventive Medicine* 2004; 39: 1099-06.
38. Pederson LL, Koval JJ, O'Connor K. Are psychosocial factors related to smoking in Grade 6 students? *Addict Behav* 1997; 22: 169-11.
39. Tercyak KP. Psychosocial risk factors for tobacco use among adolescents with asthma *Journal of Pediatric Psychology* 2003; 28: 495-504.
40. Forgays DG. Flotation rest as a smoking intervention. *Addict Behav*. 1987; 12: 85-90.
41. Glendinning A and Inglis D. Smoking behavior in youth: the problem of self-esteem? *Journal of Adolescence* 1999; 22: 673-82.
42. Frazier AL, Fisher L, Camargo CA, Tomeo C, Colditz G. Association of Adolescent Cigar Use With Other Higher-Risk Behaviors. *Pediatrics* 2000; 106: 26-39.