

# The role of social and psychological factors in high school students' smoking and drinking

PhD Thesis

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Budapest  
2016

## **BACKGROUND**

Adolescents are a highly important group of prevention because of increased prevalence of health risks and risk behaviors. The High School years are mainly important in the forming of health behaviors and bio-psychological health, thus behaviors, which (ideally) can cause that the child becomes a healthy adult later. Adolescence is a period of changes, between childhood and adulthood, which is not free of conflicts and risks of youth's mental health. During the school years adolescents' system of socialization reevaluates. They spend the most of their time in institutes. In addition, most of their free time and social network are connected with these institutes. The school, beside the institutional socialization's direct function of giving information, shows models to students in the field of social rules, role models, social emotional education, thinking and behavior. In this period, the amount of time that the adolescent spends in the peer group away from home usually increases, which is also the cause and consequence of bio-psycho-social improvement in adolescence. The role of the family converses, but still remains important in socialization, because we bring our basic values from here.

Contents of experiences lived through with peers are basically different from family and school environment. The field of peer relations is an important place of emotional involvement. This frame of reference assures the chance of taking responsibility, learning new social and cognitive competencies and forming identity. The effect of

the peer group on the individual is double-edged, because spending time with the peers is a risk factor of different risk behaviors, but on the other hand social support of friends helps the adolescent to cope with milestones of life and challenges.

Studying risk behaviors of adolescents, especially smoking and drinking behaviors and motivations is a highly important topic. The origin of adults' risk behaviors can be also found here. Nearly two of three smokers started smoking at age 18 or below. In addition, one of three smokers started at 16 or below. The dissertation focuses on the socioeconomic, social and mental variables, which can contribute to the development of risk behaviors in adolescence.

## **AIMS**

The goal of the dissertation was to examine predictors and motives of drinking and smoking among Hungarian adolescents. Among predictors socioeconomic status (SES), psychological and social variables were involved.

We think it is important to discover the preventing factors in the Hungarian society and, according to positive psychological trends, to focus on prevention instead of risk factors. Our goal is to contribute to efficient prevention in Hungary. Among psychological variables psychosomatic symptoms, shyness, loneliness, need to belong, self-esteem and competitiveness, among social variables smoking and drinking of friend and peer group were included in the study. We also examined socioeconomic status, the connection between the family's social background and the mental well-being and risk behaviors of youth. Beside the factors of risk behaviors, we also focused on motivations. We examined the motivations behind high school students' smoking and drinking.

## **METHODS**

The first, preliminary sampling was conducted in 2010 and included 397 students from 15 classes of three high schools in Hajdú-Bihar County. The main sampling was conducted in school year 2012/2013 and included 501 students from 22 classes of three high schools in Debrecen. We have informed the participating students about the way to fill our questionnaire and the goal of the study. The filling of the forms took 20 minutes average and took place at the form master's class. The form masters and directors of the schools approved the questionnaire. Participation was anonymous and volunteer.

Social and economical or socioeconomic status of adolescents is a complex phenomenon, it can be measured with both subjective (based on self-evaluation) and objective methods. We have measured SES with the student's parents' occupational status and education; and the self-evaluation of social status (subjective indicator). Subjective indicator was used with respond categories of low, lower-middle, middle, upper-middle and upper class. Results were classified to categories of lower/lower-middle, middle and upper/upper-middle class. Father's and mother's education was measured with respond categories of primary school, vocational training, high school certificate, college/university. The answers were classified into high school or below (1) and college/university

(2) categories. Occupational status included six categories: skilled non-manual and managerial (1), other non-manual (2), self-employed (3), skilled manual (4), unskilled manual (5), unemployed (6) and other. Answers were coded into same categories, except the „other” answer, which were not included.

Prevalence of smoking and drinking were measured with dichotomous variables (“Do you use to drink alcohol?”, “Do you use to smoke?”). Prevalence of binge drinking was also measured (“How many times did you drink big amount (more than one glass) of alcohol last month?”). Answers were coded into a dichotomous variable; those who drank big amount of alcohol more than two times last month were rated as binge drinkers.

Among psychological indicators psychosomatic symptoms, shyness, loneliness, need to belong, self-esteem and competitiveness were measured.

Scales adopted from international sources were used to measure these indicators. The points of an individual indicate the rate of the attribute, for example, more shyness points marks a student with more socially shy personality.

Social variables were also indicated to the study. Our goal was to examine if there is a connection between the students’ and their best friend’s and peers’ drinking and smoking behaviors. We asked questions about the risk behaviors of the peers („How many of your

friends drink alcohol permanently?”, „How many of your friends smoke?”) and best friend („Does your best friend smoke?”, „Does your best friend drink alcohol?”) of the student.

We have examined the social network of the participating classes with the method of sociometry to measure sociometric position. We have made up the sociogram and social matrix of the classes and coded the results into 12 indicators. We used factor analysis on the indicators, making a standardized factor variable. The results of this factor variable were coded into an ordinal variable (central-marginal position) to measure sociometric position.

Substance Use Coping Inventory was used to measure motives, which have been adapted to Hungarian before. The inventory contained questions about social motives (four items, e.g. „Smoking/drinking helps you fit in with other people”), self-enhancement motives (four items, e.g. „Smoking/drinking makes you feel more self-confident”), boredom relief motives (two items, e.g. “Smoking/ drinking is something to do when you are bored”) and affect regulation motives (five items, e.g. “Smoking/drinking helps you calm down when you are feeling tense or nervous”).

Chi square, Mann-Whitney and (in case of variables with normal distribution) t tests were used to examine gender differences. Distributions were examined with frequencies and Kolmogorov-Smirnov test. Connections between risk behaviors and psychological

and social variables were studied with binary logistic regression. Benjamini-Hochberg multiple testing corrections were also applied during the analysis. Results were evaluated with 5% significance level. SPSS 16.0 software was used during the analysis.



## RESULTS

Table 1 Gender differences of risk behaviors in the sample, % (ASR)

<i>SMOKING</i>	<i>BOYS</i> (N=170)	<i>GIRLS</i> (N=330)
<i>Yes</i>	33.7 (0.0)	33.7 (0.0)
<i>No</i>	66.3 (0.0)	66.3 (0.0)
Chi square = 0.00 (df: 1) Not significant		
<i>DRINKING</i>	<i>BOYS</i>	<i>GIRLS</i>
<i>Yes</i>	78.2 (3.1)*	64.3 (-3.1)*
<i>No</i>	21.8 (-3.1)*	35.7 (3.1)*
Chi square = 9,85 (df: 1) p<0,01		
<i>BINGE DRINKING</i>	<i>BOYS</i>	<i>GIRLS</i>
<i>Yes</i>	50.6 (2.1)*	39,1 (-2.1)*
<i>No</i>	49.4 (-2.1)*	60,9 (2.1)*
Chi square = 4.36 (df: 1) p<0.05		

\* p<0.05

Table 1 contains data on prevalence of smoking, drinking and binge drinking among boys and girls. Adjusted Standardized Residual (ASR) is a post hoc statistic, which indicates the difference between the observed and expected count. The prevalence of drinking is significantly higher among boys (78.2% among boys and 64.3%

among girls;  $p < 0.01$ ). The same result was observed in case of binge drinking (boys=50.6%, girls=39.1%,  $p < 0.05$ ). We did not find significant association between smoking and gender, 33.7% of both boys and girls are smoking.

Our hypotheses and results about the association between SES variables, indicators of mental well-being and risk behaviors were the followings:

- *We assumed that among psychological variables high self-esteem would be a preventive, shyness, loneliness, need to belong, psychosomatic symptoms and competitiveness would be a risk factor of both smoking and drinking. (H1)*

Among psychological variables high self-esteem behaved as a risk, while shyness and loneliness behaved as a preventive factor in our sample. These results are inconsistent with our hypothesis. (Table 2) Frequency of psychosomatic symptoms and competitiveness proved to be risk factors of both smoking and drinking, which is consistent with our hypothesis. According to these results **we partially accept this hypothesis.**

- *We assumed that among social variables both best friend's and peer group's drinking and smoking would be risk factors. (H2)*

Among social variables both best friend's smoking and drinking, and peer group's risk behaviors behaved as risk factors in our sample. (Table 2), thus **we accept our hypothesis.**

- *We assumed that higher SES is associated with higher competitiveness and self-esteem, lower score of shyness, loneliness, need to belong and psychosomatic symptoms. (H3)*

Correlation between subjective SES and mental well-being is the strongest. Both father's education and occupation status are more determining comparing to the mother's. The associations are consistent with our hypothesis in both cases; students with higher SES have better mental well-being. Thus, **we accept our hypothesis.**

- *We assumed that students from higher SES groups have higher rates of drinking. (H4)*
- *In case of smoking we assumed that higher SES is linked with lower chance of smoking. (H5)*

We did not find relationship between risk behaviors and none of SES variables. Thus, **we reject our hypotheses.**

- *In case of sociometric position and SES we assumed that students from higher SES groups have higher sociometric position. (H6)*

We could not find relationship between the variables. Thus, **we reject our hypothesis.**

Table 2 Binary logistic regression Odds Ratios of social and psychological variables, by genders [OR (CI<sub>95%</sub>)]

	Smoking Girls (N=330)	Smoking Boys (N=170)	Drink alcohol Girls	Drink alcohol Boys
Does your best friend smoke?				
No <sup>a</sup>	1	1	1	1
Yes	18,03 (9,63-33,74)***	14,62 (6,00-35,6)***	3 (1,84-4,9)***	3,54 (1,53-8,22)**
How many of your friends smoke?				
None <sup>a</sup>	1	1	1	1
Some of them	5,29 (0,68-41)	1,74 (0,20-15,1)	2,43 (0,99-5,93)	1,18 (0,32-4,35)
Half of them	16,27 (2,08-127)**	8,41 (0,96-73,7)	3,89 (1,47-10,3)**	4,5 (0,83-24,4)
Most of them	41,21 (5,23-324)***	27,5 (3,19-236)**	10,7 (3,63-31,8)***	3,6 (0,79-16,5)
All of them	207 (11,65-3676)***	22 (0,94-515)	1,67 (0,38-7,4)	N. A.
Does your best friend drink alcohol?				
No <sup>a</sup>	1	1	1	1
Yes	5,66 (2,86-11,2)***	2,56 (0,91-7,22)	18 (9,8-33,1)***	38,8 (12,5-120)***
How many of your friends drink alcohol permanently?				
None <sup>a</sup>	1	1	1	1
Some of them	1,09 (0,61-1,97)	1,49 (0,54-4,06)	1,21 (0,70-2,07)	1,26 (0,48-3,31)
Half of them	1,28 (0,56-2,97)	3,58 (1,11-11,6)	5,14 (1,83-14,44)**	1,47 (0,42-5,18)
Most of them	2,46 (1,13-5,38)*	2,19 (0,74-6,47)	5,65 (2,03-15,8)**	3,07 (0,84-11,2)
All of them	2,46 (0,92-6,61)	1,64 (0,38-7,13)	7,71 (1,69-35,2)**	4,5 (0,5-40,2)
Need to belong <sup>b</sup>	0,97 (0,93-1,01)	1,00 (0,94-1,07)	1,00 (0,96-1,04)	1,06 (0,98-1,14)
Loneliness <sup>b</sup>	0,99 (0,95-1,02)	0,96 (0,92-1,00)*	0,96 (0,92-0,99)**	0,93 (0,89-0,97)**
Psychosomatic symptoms <sup>b</sup>	1,07 (1,01-1,13)*	1,16 (1,07-1,26)***	1,04 (0,98-1,10)	1,03 (0,94-1,23)
Self-esteem <sup>b</sup>	1,00 (0,96-1,04)	0,98 (0,93-1,04)	1,05 (1,01-1,10)*	0,99 (0,92-1,06)
Competitiveness <sup>b</sup>	1,02 (0,99-1,04)	1,00 (0,96-1,03)	0,99 (0,97-1,02)	1,06 (1,02-1,11)**
Shyness <sup>b</sup>	0,97 (0,94-1,00)*	0,98 (0,94-1,02)	0,94 (0,95-1,00)	0,95 (0,90-1,00)*
Age <sup>b</sup>	1,29 (1,07-1,54)**	1,45 (1,08-1,95)*	1,41 (1,16-1,7)***	1,49 (1,06-2,08)*

<sup>a</sup> Reference group <sup>b</sup> Numeric variable \* p<0,05; \*\* p<0,01; \*\*\* p<0,001 OR: Odds Ratio CI<sub>95%</sub>: 95% Confidence Interval

Social motivation found to be the main determinant of smoking and drinking. Neither alcohol use, nor binge drinking had significant motivation predictor, except social motivation. This indicates that at this age alcohol use in social situations is very important, social normative nature of drinking is strong compared to any other motivation. It seems that this is stronger than any other motivating factor among Hungarian adolescents. In case of smoking social motivation also proved to be a predictor, but principally among girls. Thus, the social normative nature of smoking and social activity are more significant for them.

## **DISCUSSION**

In my dissertation I have verified the primary role of the next social variables in adolescents' smoking and drinking: best friend's smoking and drinking, peer group's smoking and drinking and social motivation. I have also verified the minor role of psychological variables. I have explained with the primary and contextual role of social variables that loneliness and shyness behaved as preventive, self-esteem behaved as risk factors in the sample. In addition, I have established that there is no association between social background and risk behaviors of the participating adolescents, which verifies the theory of 'equalization'. According to this theory, association between social disadvantage and health is relatively less among adolescents compared to children and adults. I have found association between SES variables and psychological variables. This result verifies that mental well-being in adolescence has a later effect in adulthood, playing a role as a mediator variable in SES-related differences in health. Primary role of subjective SES variable and parents' occupational status' larger effect on risk behaviors comparing with education verify the conception of Kahnemann (illusion of focusing).

We have made several exact recommendations about the prevention work based on our results and urge more intensive promotion of adolescents' mental well-being. We suggest the development of

mental health status of students more intensively. We also suggest the use of the interpreted method of sociometry to filter out lonely students. It is also important to sort socially disadvantaged students, because according to our results they are also an endangered group from an aspect of mental hygiene. Cooperative working methods and collective tasks outside school (e.g. projects) give a great opportunity to integrate these students into the class collective and to improve their mental well-being. Open and recipient atmosphere of the school can be an addition to this process. It is important to teach the students how to behave assertively in social situations, avoiding social pressure before they start to smoke or drink because of coping or self-enhancement. Efficient prevention has to involve the whole high school class into its work, because the norms of the class have a great effect on adolescents' risk behaviors. In our opinion, prevention also has to involve promotion of social skills. The clearly stated goals and rules by the teacher, the student-based teaching, using cooperative study methods and positive acceptance of the students have positive effect on social competences.

## LIST OF OWN PUBLICATIONS

List of the publications related to the subject:

1. **Varga S, Piko BF.** (2015) Being lonely or using substances with friends? A cross-sectional study of Hungarian adolescents' health risk behaviours. *BMC Public Health*, 15: 1107. <http://www.biomedcentral.com/1471-2458/15/1107>
2. **Varga Sz, Pikó BF.** (2015) Társas és egyéni pszichológiai tényezők szerepe a serdülők rizikómagatartásában. *Mentálhigiéné és Pszichoszomatika*, 16(1): 35-54.
3. **Varga S, Piko BF, Fitzpatrick KM.** (2014) Socioeconomic inequalities in mental well-being among Hungarian adolescents: a cross-sectional study. *International Journal for Equity in Health*, 13: 100. <http://www.equityhealthj.com/content/13/1/100>
4. **Varga Sz, Pikó BF.** (2013) Középiskolások mentális jólléte és egészségmagatartása társadalmi helyzetük tükrében. *Társadalomkutatás*, 31(3): 224-238.
5. **Varga Sz.** (2010) Egészségtudatosság a 18-24 évesek körében – Hozzáállás-elemzés interjú vizsgálat alapján. *Magyar Epidemiológia*, 7(2-3): 111-121.



6. **Varga Sz.** (2010) A társadalmi háttér hatása a középiskolások kapcsolatteremtő képességére. *Iskolakultúra*, 20(7-8): 112-128.
7. Pikó BF, **Varga Sz**, Mellor D. (2016) Are adolescents with high self-esteem protected from psychosomatic symptomatology? *European Journal of Pediatrics*, 175(6): 785-92.
8. Piko BF, **Varga S**, Wills TA. (2015) A Study of Motives for Tobacco and Alcohol Use Among High School Students in Hungary. *Journal of Community Health*, 40(4): 744-749. <http://www.ncbi.nlm.nih.gov/pubmed/25637430>
9. Pikó BF, **Varga Sz.** (2014) Mi motiválja a fiatalok dohányzását és alkoholfogyasztását? Magatartás-epidemiológiai elemzés. *Orvosi Hetilap*, 155(3): 100-105.