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Predictors of Smoking and Alcohol Use Behaviour in Undergraduate Students: Application of the Theory of Planned Behaviour

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Abstract

Background: Among the most important modifiable risky behaviours for health are smoking and alcohol use and abuse beginning at early age. The importance of identifying the presence and the severity of these unhealthy behaviours is in the focus of this research study with the aim of preventing them via psychological interventions of health.

Aim: The original investigation, detection and modification of psychological factors that contribute to smoking behaviour and alcohol use on postadolescent age and furthermore the intention of future use. This will be useful to identify both high-risk groups and future users of tobacco and alcohol.

Material-Method: For the purpose of the research part to be presented a prototype questionnaire was constructed, with the conduction of three pilot studies preceded, for both tobacco and alcohol use, based on the health model "Theory of Planned Behaviour" (Ajzen, 1991). The most significant factors are behavioural attitudes, social norms, perceived behavioral control and self-efficacy. All parameters mentioned above lead to intention to smoke and drink alcohol. Present behaviours of smoking and alcohol drinking are also evaluated. The sample consists of 791 students of postadolescent age, 18-25 years of both sexes, who study in faculties of the University of Peloponnese and Technological Institute of Kalamata, in Greece.

Results: The results conducting a series of statistical analyses, via statistical program SPSS 21.0, revealed that the reliability coefficient for the scales of both alcohol consumption and smoking were fairly high (Cronbach $\alpha > 0.85$). Factor analyses revealed that the items of the subscales loaded on few factors, which accounted for at least 53.1% of the total variance".

Conclusion: The application of the above research tool is demonstrated in the context of best prevention practices in health care in collaboration with the academic community. Ultimate goal is the design of appropriate primary preventive health interventions in students.

Key Words: students, smoking, alcohol abuse, intentions, predictability, prevention

Introduction

It is widely acknowledged that in modern industrialized countries is intense effect the engagement of young people with socially unacceptable activities, jeopardizing the long-term prosperity. Statistics report (Cole, 2002) that in the U.S. 17% of high school students have used alcohol or drugs in parallel with other activities in accordance with measurements of the last year. In Greece, adolescents, mainly those who live in suburban and rural areas, tend to smoke and use alcohol that consists an important problem (Triantafillidou & Tsoumakas, 2006). Risk factors for starting drinking alcohol include family, relations with peers, risky behaviors, genetic reasons and advertisements.

We would say that while some behaviours of adolescents are undoubtedly a normal stage of development, have in many cases affects both in family, in school and social life, as well as in their health, leading them to accurately display delinquent behavior, as addictive substances' use (Roussis, 2007). Many factors associated with drug addiction in adolescents, such as the degree of effectiveness with which face their feelings and their relationships with others, the family environment, low levels of self-esteem, negative patterns and unhealthy behavior taught in the context of their families and carry to school, and stereotypes in the school community as well as negative relationships with peers (Roussis, 2007).

In a research study on a representative sample of 2.448 people in adolescence and young adulthood (17-24 years old), Madianos et al. (1995) investigated the psychosocial issues associated with the use of licit and illicit substances. What was found among others was that gender and age were associated with higher drug use throughout their life, that men, young adults reported a higher rate of drug use than women. Also, the positive attitude towards the use of cannabis, systemic smoking, illicit drug use by close friends, as well as low self-esteem, tobacco use and alcohol from family members and the problematic use of alcohol acted as predictors of illicit drug use. Variables such as the use of psychoactive

substances, with or without medical recommendation from family members, lack of satisfaction with social life and the presence of symptoms of anxiety and depression showed a statistically significant association with the use of legal substances.

Youth is the next developmental stage after adolescence. What happens then? Do adolescents who smoke and consume alcohol stop getting to adulthood? More research studies focus on adolescence than early adulthood. The upper purpose of this study is to offer research data to this direction.

McMillan & Conner (2003) documented the negative consequences of smoking. According to epidemiological data (Centers for disease control and prevention, 2002, Annual Smoking-United States, 2005) smoking seems to be a major cause of preventable death in the United States, with 440,000 deaths each year are attributed to this habit. Also, according to Solberg et al. (2007), youngers 18 to 24 years old use to smoke more than any other age group, mainly those in colleges than other young adults who do not study. It seems that young adults are more available to follow cessation methods than older smokers. In addition, restrictions on public smoking mainly in bars and restaurants affected their unhealthy behaviours.

Between emotions describing a smoker owned, according to the state of the organism and the quantity of nicotine, stimulate, calm, increased attention and memory, decline of feeling pain and hunger, ease of bowel movements and relieve stress. However, all these pleasant feelings associated with nicotine dependence and well-being felt by the person associated with the absence of unpleasant feelings and symptoms created by the lack of it. In other words, is the lack of deprivation all these desired feelings fuming person, while a non smoker does not feel neither pleasant nor unpleasant feelings of any smoke inhalation since there are no such changes, hardships and addictions in his system (Physical dependence on smoking, <http://www.neahygeia.gr>, 2012).

Although alcohol can be beneficial to psychological health when used in small quantities, the quantity required to help

prevent heart disease appears to be higher and the use of large quantities of alcohol causes cirrhosis of the liver. The age group most associated with higher prevalence of alcohol use is that of 18-35 years . Among the reasons noted is that young people drink to “get high” to get drunk and alleviate psychological problems , preferring most other types of drinks in relation to the past . These refer to changes in the social and cultural context of drinking alcohol showing the culture in relation to this subject to change and is beyond the standards of the past associated with the consumption within the family at food time, feasts, etc. (Kokkevi, 2007).

Research Questions and hypothesis

The main questions that have been raised at the beginning of the research are these:

- What are the most common modifiable factors that affect health in youth?
- What is known in scientific community about alcohol abuse and smoking in youth?
- In what way we can record the habits of postadolescents, their attitudes, the effects of others, their control beliefs as well as their intentions for future?
- In what way we can create a prototype research tool using a valid and reliable health model?

Therefore, purposes of this research include:

a) The research of the most important modifiable risk factors for health that are smoking and alcohol abuse in early age (i.e. students) but also the research of psychosocial factors that contribute to the above behaviours.

b) The investigation of predictive methods for adoption of smoking and alcohol abuse and the severity so as to detect future smokers and alcohol abusers but also high-risk groups (i.e. young people who are vulnerable to maluses).

c) Ultimate purpose is the creation of a whole of new psychosocial health interventions for primary, secondary and tertiary prevention for modification of psychological factors that contribute to smoking behavior and alcohol use on postadolescent age.

The hypothesis is that by creating a research tool that measures the axes of the health model “Theory of Planned Behaviour” (Ajzen, 1991) we can investigate the habits of smoking and alcohol use in students and detect those who are in high risk at the time being or in the near future.

Background

The Theory of Planned Behaviour of Ajzen (Ajzen 1991, Ajzen 1988, Ajzen & Fishbein 1980) consists the theoretical framework of our research study. The corner stone of this health model is that behaviour can be predicted by the intention of the people for adoption of that. The formation of *intention* includes three fundamental factors: *attitudes* toward the specific behaviour, *subjective norms* of the environment as well as the *perceived behavioural control* of the person to carry out the behaviour, for example of smoking and alcohol abuse. *Attitudes* include the evaluations of the individual toward a behaviour. As far as *Subjective norms* concern, include the dimensions of normative beliefs, mainly beliefs of significant others for that behaviour. The factor of *perceived behavioral control* includes the dimensions of *perceived controllability*, *ease* adopting an attitude as well as *self-efficacy*. *Self efficacy* is associated with a person’s beliefs about the extent of the capabilities to express this behaviour and according to the theory it can lead directly to the prediction of the behaviour under research. In Figure 1 the main axes of the Theory of Planned Behaviour are depicted.

Topa and Moriano (2010) in their meta-analytical study in a sample of students aged 10-21 year old, in the base of the Theory of Planned Behaviour found that the behaviour of smoking was statistically related with intentions to smoke. In addition, attitudes and subjective norms based intentions, as well as perceived behavioural control that was related both with intentions and the behaviour directly.

As regards people of postadolescent age of a sample of students , Collins and Carey (2007), used the Theory of Planned Behaviour in predicting heavy episodic drunkenness. In particular , they assumed

that the older episodes of drunkenness, the attitudes to drinking alcohol, subjective norms, and negative self-efficacy regarding drinking alcohol would be able predictors of intention, which then could serve as a predictor future incidents heavy episodic drunkenness. Self-efficacy and attitudes more compared with subjective norms predicted significantly essentially intention. These factors together with the study of past incidents of heavy episodic drunkenness predicted future behaviour of episodes.

In another research study, Huchting, Lac and LaBrie (2008) found that Greek female students may be at risk because of their standards for heavy alcohol consumption. Using the health model mentioned above they found that social norms significantly predicted intentions for drinking more than attitudes or perceived behavioral control. In this study, perceived behavioral control, although did not statistically significantly predict intentions, however, significantly directly predicted behaviours of drinking. Overall, the predictive model explains 44.7% of the variance of intentions and 73.4% of the variance in behaviour.

McMillan and Conner (2003) in their research study, used a sample of 494 undergraduate students basing their questionnaire on the Theory of Planned Behaviour for smoking and alcohol use. They measured the behaviour of 146 participants six months later. Their findings supported that the variables of the theory successfully predicted intentions to use tobacco and alcohol, especially attitudes and perceived behavioral control functioned as important predictive factors of intentions for alcohol, while perceived behavioral control was predictive of smoking.

Also, Conner et al. (2006) found at their research that attitudes, subjective norms and perceived behavioral control explained between 28%-46% of intentions' variability but mainly contributed to the prediction of intention as well as of real behaviour the factor of past behaviour and measures of the self-identity of a "drinker".

Another cross-cultural study by Rise and Ommundsen (2011) examined in addition to the main factors of the Theory of Planned

Behaviour, extended predictors such as self-identity, group identity and moral norms, about smoking cessation behaviour. One of the evidence provide the moderating role of the culture on smoking cessation. Subjective norms seem to be stronger in the prediction to quit smoking in a more collectivistic country like Spain than attitudes that seem to be a stronger predictor in more individualistic country like Norway.

A series of other studies have been taken place on the base of this model in risky health behaviors and substance use of young adults (Cooke et al., 2007, Johnston & White, 2003, Maher & Rickwood, 1997, Marcoux και Shope, 1997, Norman et al., 1998).

In Greek literature there is a lack of researches according to alcohol and tobacco use in students using the Theory of Planned Behaviour. To this direction, we hope to offer new research evidences via our research to the scientific community.

Methodology

The sample consists of 791 Greek students, 18-25 years. For the purposes of the research, we constructed two questionnaires – one for alcohol use and one for smoking – based on the Theory of Planned Behaviour (Figure 1).

Three pilot studies preceded the construction and the weighting of final questionnaires, as follows: The first pilot study took place with the participation of five students of various departments, who raised several issues about smoking and alcohol consumption. We then constructed the questions, taking into account, the guide for constructing a research tool on the base of the Theory of Planned Behaviour (Ajzen, 2002) and questionnaires and research tools from other studies (Cooke, Sniehotta & Schuz, 2007, Jamison & Myers, 2008, McMillan & Conner, 2003, Norman, Bennetti & Lewis (1998). The second pilot study concluded twenty students coming from different departments of the University of Peloponnese and The Technological Educational Institute of Kalamata who fulfilled the questionnaires.

The questionnaires took their final form after taking into consideration the comments and

questions of the participants and the results of the statistical analysis. Apart from the demographic characteristics, the questionnaire of alcohol includes 26 scales and that of smoking 13 scales including the main axes of the health model we used.

Thereafter, a third pilot study took place for the evaluation of the validity and reliability of the questionnaires. 138 students of the age of 18 to 25 year old participated, the period between June and September 2012 studying in various departments of the University of Peloponnese and The Technological Educational Institute of Kalamata. Statistical analyses demonstrate that the reliability coefficients of the scales were statistical significant, the items of the scale depicted high internal consistency and

some significant descriptive results were depicted (Barmpagianni et al., 2013).

The main research took place in 791 participants, students of 18-25 year old, at the departments of the University of Peloponnese and The Technological Educational Institute of Kalamata, using a written form of the questionnaires or an electronic form, in random sampling. The process' duration was about 25 minutes and took place in real time, i.e. in time of lectures after permission. In the case of electronic forms students came in computer classes where the form was ready in their scenes. IBM SPSS Statistics 21.0 was used for the statistical analyses while the significance level was set to $\alpha = 5\%$.

The Theory of Planned Behaviour

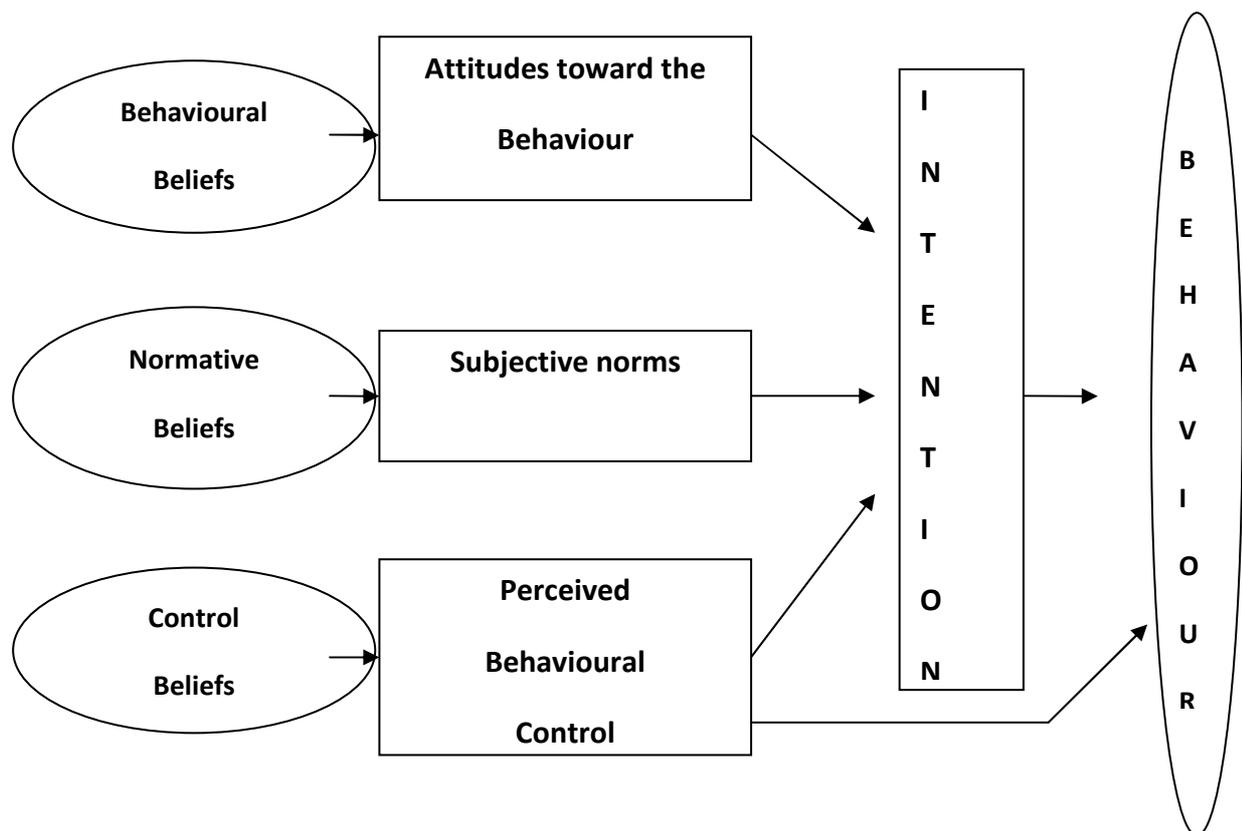


Figure 1. The components of the Theory of Planned Behaviour

Results

65.8 % were women and 34.2 % men. 60.5 % were students of the University of Peloponnese, while 39.5 % studying at TEI of Kalamata (Table 1). 34.3 % of the

sample was at the first year of studies, 22.2 % at the second year, 20.6 % at the third year and the remaining 22.9 % at the fourth or higher year

		Frequency	Percent
Sex	Woman	509	65.8
	Man	265	34.2
Year of study	First	256	34.3
	Second	166	22.2
	Third	154	20.6
	Fourth or higher	171	22.9
University	Of Peloponnese	471	60.5
	TEI of Kalamata	307	39.5
Personal Statement	Without relationship	445	56.7
	In brief relationship	127	16.2
	In long-term relationship	163	20.8
	Married	17	2.2
	Divorced	33	4.2
Born on Greece	No	63	8.0
	Yes	727	92.0
State of residence	Accommodation with parents	213	27.0
	I live alone	454	57.5
	I live with my husband / wife / partner	40	5.1
	I rent house with roommate	57	7.2
Table 1: Students' Data			

Alcohol consumption. In relation to the last week's behaviour of *alcohol use* of participants, 35.6 % consumed 1 to 5 times whiskey, vodka, brandy or another drink of the same category. 26.8 % consumed up to 5 times shots. 89.2% of the participants said that their family members drink from moderate to none alcohol, father more than mother and the most popular drink is wine (2.81 (± 4.18) for father and 1.35 (± 2.61) for mother). At all, students stated that men are allowed to drink more than women.

The drink of the highest consumption at an outlet last week was that of type whiskey, vodka, brandy etc. (1.37 \pm 2.73), while following the shots (1.34 \pm 3.60). In relation to the number of times drunk alcoholic beverages, to an extent *they can not keep their balance by walking, cannot speak well, vomit or could not remember what had happened*, the following were found: 84.5 % of students had drunk so much up to 5 times throughout his life. 96.5 % had drunk so much as 2 times during the last month. 85.7 % of the students had drunk so much up to 5 times in the last year.

The vast majority of students said that never happened any of these events. Nevertheless, important is the percentage of students (13.9 %) due to the *alcohol they neglected their studies 1 to 2 times*. Furthermore, 79.6 of students in an exit, consume 1 to 3 alcoholic beverages, 8.6 % from 4 to 6 drinks, no drink 8.7 % and 3 % consumed 7 or more alcoholic drinks. A 89.1 % of the students said that *most or all of their friends drink alcohol*. 93.8 % of friends consume from 1 to 6 drinks in a typical exit. 82.1 % of students said that *visit a bar* from 1 to 4 times a week and the 48.8 % spend 3 to 4 hours at a bar with friends. Only 6.6 % of the sample said they do not drink alcohol. 3.4% out the students, who drink alcohol, always *drink alone*.

In relation to the degree of agreement between students and some proposals concerning alcohol consumption the records are as follows: 43.9 % agree *to some of his friends that absolutely would expect to drink when they go out*. However, 62.0 % disagree a little bit to absolutely *that his/her family would approve drinking*.

As far as the scales related to self-efficacy beliefs and control concern showed that 91.1 % of students agree a little bit to strongly *that if they drink alcohol is mostly under control*. Nonetheless, 49.9% agree completely that is easy to drink *more than usual when drinking with friends*, although a number of students (58.4 %) disagree more or less entirely *to have control over the amount of drinking when drinking with friends*. 47.9 % of the sample agree that *when they are bought a drink, it is hard to say "no"*. Half of the participants agree more or less that *during celebrations they tend to drink more than usual*.

As far as attitudes are concerned, it seems that most of the students agree that *alcohol consumption is relaxing, enjoyable and favorable* but they also agree that is not *safe and health secure*.

Smoking. 71% of participants *smoke* (Table 2). From those who do not smoke 18.1% *used to smoke in the past*. 26.2 % of students smoked 11-20 cigarettes in average a day and 10.7 % more than 21 cigarettes a day. As far as *past month* concerns, 27.6 % of students smoked 11-20 cigarettes a day and 16.9 % more than 21 cigarettes a day. The average number of cigarettes they intended to *smoke in the next month* was 229.64 (± 289.24) cigarettes. A 30.7 % of smokers *started out of curiosity*. 43.6 % stated that *their mother smokes*, 69.3 % *their father is a smoker* and 25.9% stated that *their siblings smoke*.

		Frequency	Percentage (%)
Do you smoke?	No	562	71.0
	Yes	229	29.0
If you do not currently smoke, never smoked in the past?	No	457	81.9
	Yes	101	18.1
On average, about how many cigarettes do you smoke a day?	1 - 5	77	34.2
	6 - 10	65	28.9
	11 - 20	59	26.2
	21+	24	10.7
How many cigarettes did you smoke on average per day during the past month?	1 - 5	60	26.7
	6 - 10	65	28.9
	11 - 20	62	27.6
	21+	38	16.9
How many cigarettes do you intend to smoke next month;	229.64 (\pm 289.24)		

Table 2: Smoking habits of students

Also, most of *participants' friends smoked*. 58.3 % disagreed that *their best friends believe that is negative to smoke*. 79.2 % of students *who were not smokers stated that there is not possibility to smoke in future* but there was a 19.2% that stated that *there is a possibility to smoke*.

Half of the smokers agreed that *they smoke more than usual when they have a lot of work to do*, 77.2 % when *they are in a bad mood*, 71.6 % when *they are in stress*, almost half of them when *they drink coffee*. According to their attitudes, most of them (79.1 %) believed that smoking is not *secure*, but 44.2 % believe that it is *enjoyable*.

Reliability. Reliability coefficients of Cronbach and factor analysis are listed in tables 3 and 4. The scales showed high internal consistency ranging from 0.852 to 0.903 (Table 3). The items also loaded on few factors, accounted for at least 53.1% of the total variance (Table 4). Specifically, the reliability coefficient for the scale of students' agreement with the proposals of perceived behavioural control and of normative beliefs for alcohol consumption is $\alpha=0.883$ (Table 3). Factor analysis resulted in 5 factors which explain 53.1 % of the original variance for this scale (Table 4). The reliability coefficient for the scale of attitudes toward alcohol consumption is $\alpha=0.903$ (Table 3). Factor analysis resulted in 2 statistically significant factors that explain 75.1 % of the variance (Table 4). As far as the scale of normative beliefs about smoking concerns, the reliability coefficient is $\alpha=0.867$ (Table 3). Factor analysis for this scale resulted in 2 factors that explain 60.0 % of the variance (Table 4). The reliability coefficient of the scale of perceived behavioural control on smoking is $\alpha=0.886$ (Table 3) and 5 statistically significant factors that explain 62 % of the variance (Table 4).

Finally, the scale that measures the attitudes toward smoking are valued has Cronbach $\alpha=0.852$ (Table 3), while 2 statistically significant factors explain 82 % of the variance.

Discussion

Significant number of students consume heavy drinks and shots. Most of their parents do not consume alcohol in large quantities so they do not affect students' habits. Moreover, most of students live alone. Furthermore, most of students last month had an episodic of drunkenness or problematic use.

An important number of students (3%) used to consume 7 or more alcoholic drinks in an exit that is a really risky and unhealthy behaviour. One of the results is that a percentage of 13.9 % had neglected 1 to 2 times their studies due to this behaviour. It is remarkable that a percentage of 3.4 % drink alone that is considered to be a characteristic of problematic use. But also in cases that students drink with their friends it seems to be affected by them, as at least half of them stated. We should take this into consideration in combination with the fact that half of students that can not say "no" when they are offered a drink. In addition, remarkable are the attitudes of students toward alcohol use because they find it relaxing although they believe that it is not safe.

Statistical results about smoking demonstrate that most of students smoke, almost one out of ten more than a packet of cigarettes each day, although it seems to be a limitation in relation to past month. It is remarkable that most of students' father smokes and half of their mothers, but also most of their friends that are aggravating factors for students' habits. Most of students also smoke under stressing situations and bad mood, as well as they drink coffee. In addition, although they know that smoking is

unhealthy they consider it enjoyable. We should take into account the high percentage (19.2%) of students who state the possibility to start smoking in the future.

Both of questionnaires' scales are valid and reliable and the items of the subscales loaded on few factors, accounted for at least 53.1% of the total variance.

The application of the above research tools and interventions is demonstrated in the context of best prevention practices in health care in collaboration with the academic community. Ultimate goal is the design of appropriate primary preventive health interventions in the juvenile population, programs for non-users of tobacco and alcohol and secondary and tertiary prevention programs in heavy drinkers and people at high risk, reducing these modifiable risk factors for physical illness.

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