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Survey for describing students' smoking behavior

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Abstract

This study contains information about the survey that was developed to examine smoking behavior of secondary school students and the factors that influence this behavior. The survey was prepared in accordance with the Theory of Planned Behavior (TPB), proposed by Ajzen (1985). The survey consists of an introduction in which there are questions about demographic information and the main components of TPB *(Behavior, Behavioral Intention, Attitude, Subjective Norm, and Perceived Behavioral Control Scales)* and the sub-components *(Behavioral Beliefs, Normative Beliefs and Control Beliefs Scales)*. By applying this survey to large samples, it is planned to examine smoking behavior in detail.

Keywords: Health education, smoking, Theory of Planned Behavior

1. Introduction

One of the most important health problems that the developed and developing countries face today is smoking. World Health Organisation describes smoking as an epidemic (World Health Organization, 2003). Smoking causes serious health problems such as cardiac diseases, various cancers – mainly   lung cancer, respiratory tract infections, and asthma in both active smokers and in passive smokers being exposed to the cigarette smoke. This situation lowers the life quality of individuals on the one hand, and brings a big burden on the economy due to medical expenses on the other hand.

Recently, such measures as public informing campaigns, raising the taxes and putting bans on cigarette advertisements have become widespread in many countries so as to reduce smoking. Those precautions helped to reduce cigarette consumption in developed countries. However, it is still high in developing countries, and furthermore, it has been rising (World Health Organization, 2008). The rise is widespread especially among the youth.

Struggling with smoking, one of the most important health problems of present day, loads great responsibility on individuals and on institutions. Schools and teachers in particular, that have the chance to reach every part of the society, play a very important role in this respect. Considering the fact that age of starting smoking is 11 on average in the world (World Health Organization, 2005), the importance of schools' and teachers' responsibility becomes more apparent. It is obvious that Turkey will face great health and economic problems in the future unless the precautions are not taken mainly in schools so that the young do not start smoking or so that they quit it in our

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country, where the number of young population is high. Hence, this study aims to develop a survey to determine the secondary education students' smoking behaviors and the factors influencing those behaviors. It is believed that the survey will contribute to the collection of the data required for preparing the circumstances needed and for planning the process of teaching in order to prepare students for a life with no cigarettes.

In this study, Theory of Planned Behavior was used to explain smoking behavior. This theory is accepted as one of the most effective socio-psychological theories that explain behavior (TPB, Ajzen, 1985; 2005). Since its inception, TPB has been successfully used in various fields, and it has provided the best interpretable results in terms of behavior and factors affecting behavior intentions. The aim of the theory is to foresee behavior. According to the theory, the behavior of an individual depends on his or her behavioral intention. Behavioral intention is under the influence of three variables: Attitude towards behavior, subjective norm, and perceived behavioral control. These variables are the main components that form the first part of the theory, and they are interrelated. *Attitude towards Behavior* is the evaluation of a behavior as good or bad by the individual who is going to perform that behavior. *Subjective Norm* indicates the social pressure an individual perceives in relation to behaving in a certain way. *Perceived Behavioral Control* indicates how easy or difficult one finds to perform a certain behavior. These main dimensions of the theory are shaped with the effect of the *beliefs* dimensions, which constitute the second part of the theory: 1) Behavioral Beliefs: Possible results of a behavior that is important for the individual. 2) Normative Beliefs: Expectations towards the behavior by the ones whom the individual holds in high esteem. 3) Control Beliefs: Situations that makes it easy/difficult for the individual to behave in a certain way. Each variable in the beliefs dimension consists of 2 sub-dimensions which can be called Expectation and Value (Expectation-Value Theory; Frey et al., 1993). Behavioral beliefs are determined by the predictions of the individual about the results of the behavior, and by how he or she evaluates these results. Normative beliefs are a combination of the expectations of the ones whom the individual holds in high esteem and his or her will to meet this expectation. Control beliefs are determined by examining the internal (skill, knowledge, etc.) and external (money, time, etc.) proficiencies that are required in order to behave in a particular way (Ajzen, 2005). Taking this into consideration, before moving on with the analyses, the real values to be used in the study were determined by multiplying the numbers referring to the answers given to the items in the beliefs section.
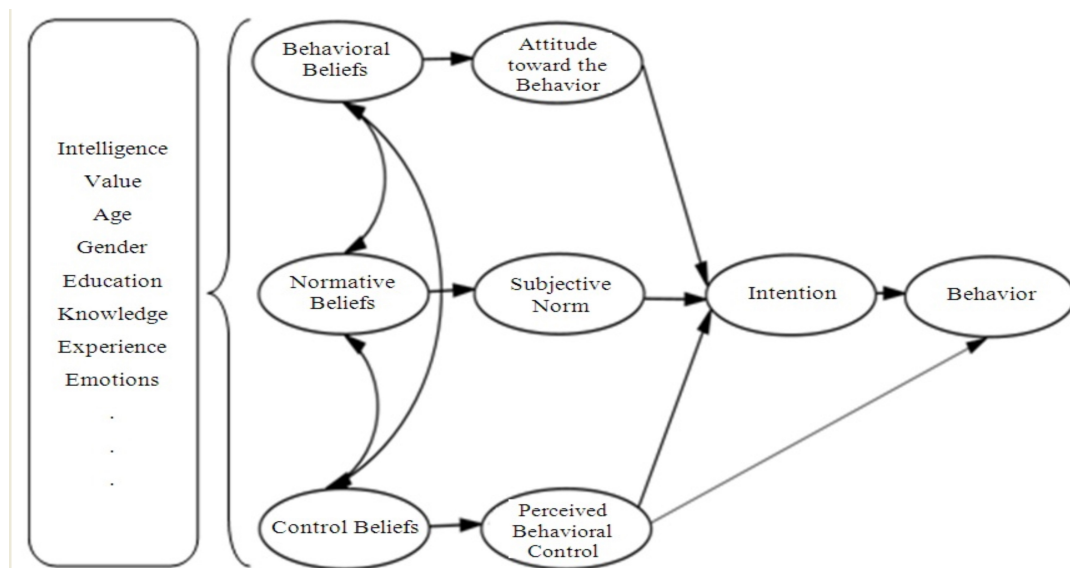

Figure 1. The Theory of Planned Behavior (adapted from Ajzen, 2005)

2. Method

2.1. Research Sample

The research sample was composed of 388 students attending the two secondary education schools in Ankara in the 2012-2013 academic year. 164 of the participants (%42) were female students while 224 (%58) were male. They were in the 14-19 age range, and the average age was 16.5. And their distribution according to grade levels was: 126 of them (%32) were in the 9th grade, 32 (%8.2) were in the 10th grade, 41 (%10.6) were in the 11th grade and 189 (%48.7) were in the 12th grade. 228 students (%59) said that there were smokers in their family whereas 160 (%41) said that there were no smokers in their family. In addition, 332 students (85.6%) reported that they do not smoke. The time for starting smoking for the 56 students (%14.4) who said that they smoke was between a few months and 8 years.

2.2. Data Analysis

The data were put to exploratory factor analysis. The decisions as to the compatibility of the data for factor analysis were made by checking whether or not the Kaiser-Meyer-Olkin (KMO) value was above .6 and whether or not the Barlett's Test of Sphericity was significant. In determining the factor number, the factors whose eigenvalue statistics were bigger than 1 were considered to be significant. The factors up to the point where the scree plot takes a horizontal shape were regarded as the maximum factor numbers to be obtained (Buyukozturk, 2006; Kalayci, 2006). In deciding to include an item in the scale, it was important that the load value in the item factor was .45 or higher and that the common variance value was .3 and above. Besides, it was also important that the difference between the load value which the item received in the first factor and the load value which it received in other factors was .10 and higher (Tabachnick & Fidell, 2007). Thus, the overlapping items which were not clear as to which factor they belonged to were removed from the scale. The reliability of the scales were checked by calculating the Cronbach's Alpha (α) internal consistency coefficient.

3. Findings

The KMO values found for the scales were between .68 and .92. The significance level of Barlett's Test of Sphericity was found to be 0.000 (p<0.05) for all the scales. These were the results showing that the data were compatible with factor analysis. Consequently, the item factor loads in all of the scales were found to be .47 at the minimum and .93 at the maximum.

The Cronbach's Alpha value for the behavior directed attitude, one of the main components of the Theory of Planned Behavior (TPB), was found as .85 while that value was found to be .79 for the perceived behavioral control. The reliability for the subjective norm measured with 2 items was calculated as .51 through Spearman's correlation coefficient (r) by considering the fact that the items did not distributed normally. Following the factor analysis of the main components of the theory, the items which were formed in order to determine the behavior directed attitude were found as positive towards smoking (5 items, α = .90) and as negative (2 items, r = .56). The total variance explained by these two factors was 73%. The subjective norm was measured with two items whose mutual correlation was .51 whereas the perceived behavioral control was measured with 3 items accounting for the 71% of the total variance in one factor.

The Cronbach's Alpha values were .89, .95, and .90 respectively for behavioral beliefs, normative beliefs and control beliefs scales - the sub components. In consequence of the factor analyses conducted for the sub-components, the items about behavioral beliefs were grouped under two factors containing the medical (9 items, α = .94) and psychological (5 items, α = .83) consequences of smoking. These two factors together accounted for the 68% of the total variance. Normative behaviors contained 9 items accounting for the 74% of the total variance in one factor. Control beliefs, however, were grouped into three factors: 1) The availability of atmosphere suitable for

smoking (5 items, α = .88), 2) Responses/punishments for smoking (5 items, α = .79), and 3) Financial potential for smoking (3 items, α = .88). These three factors accounted for the 67% of the total variance (Table 1).

Table 1: Factor Analysis Results for the Survey for Describing Students' Smoking Behavior

TPB Dimension	Number of Items	KMO	Percentage of Explained Variance	Range of Factor Loadings	Reliability (α or r*)
Attitude towards Behavior					.85
Positive approach	5	.83	73	.67 - .92	.90
Negative approach	2			.82 - .86	.56*
Subjective Norm	2	-	-	-	.51*
Perceived Behavioral Control	3	.68	71	.79 - .88	.79
Behavioral Beliefs					.89
Medical consequences	9	.91	68	.61 -.93	.94
Psychological consequences	5			.47 - .81	.83
Normative Beliefs	9	.92	74	.75 - .93	.95
Control Beliefs					.90
Suitable atmosphere	5			.72 - .80	.88
Response/ Punishment	5	.87	67	.66 - .79	.79
Financial potential	3			.65 - .86	.88

* The reliability of the scales was checked by calculating the Cronbach's Alpha coefficient (α); but for the reliability of the structures that were measured with two items, the Spearman's correlations coefficient (r) was calculated.

Consequently, the "Survey for Describing Students' Smoking Behavior", which was formed by reviewing the field literature and following the instructions for the Theory of Planned Behavior and for which the reliability and validity analyses were conducted, was composed of an introductory part where demographic information was presented and 6 scales of 7-pointed likert type: Attitude directed to Behavior (two dimensions, totally 7 items), Subjective Norm (2 items), and Perceived Behavioral Control (3 items), Behavioral Beliefs (2 dimensions, totally 14 items), Normative Beliefs (9 items), and Control Beliefs (3 dimensions, totally 13 items). An item for each dimension of the scales and for each scale is shown in Table 2.

Table 2: Survey for Describing Students' Smoking Behavior – Samples for items

TPB Dimension	Sample items
Attitude towards Behavior	
Positive approach	*Smoking is enjoyable to me.*
Negative approach	*Smoking is harmful to me.*
Subjective Norm	*People/institutions that are important to me support my smoking.*
Perceived Behavior Control	*If I want to smoke, conditions are suitable for that.*
Behavioral Beliefs (results of behavior **X** evaluation of the results)	*If I smoke…*
Medical consequences	*Risk of cancer increases for me. **X** The rise in the risk of cancer is important to me.*
Psychological consequences	*My self-esteem increases. **X** Increase in my self esteem is important to me*
Normative Beliefs (expectations **X** the importance of expectations for the individual)	*My friends expect me to smoke. **X** My friends' expectations of my smoking is important to me.*
Control Beliefs (perceived conditions **X** the facilitating effect of conditions)	
Suitable atmosphere	*People smoke in parties I go to. **X** This makes my smoking easier.*

Response/ Punishment	*I am fined if I smoke in some places. **X** This makes my smoking more difficult.*
Financial potential	*My financial potential is sufficient to buy cigarettes. **X** This makes my smoking easier.*

4. Result and Discussion

A survey was developed in this research so as to explain the smoking behaviors of secondary education students based on the "Theory of Planned Behavior". The field literature was reviewed by the researchers for this purpose, and the variables necessary for specifying individuals' smoking behaviors on the basis of the Theory of Planned Behavior were determined. The pilot work for the questionnaire was performed with 388 students attending two secondary education schools. By using the data obtained for the construct validity of the survey, the exploratory factor analysis was done. At the same time, by considering the Kaiser-Meyer-Olkin sample compatibility test (KMO) and the results of Barlett's Test of Sphericity, it was found that the data were compatible with factor analysis. In the light of the factor analysis results, the number of dimensions of the scales that were determined on the basis of the Theory of Planned Behavior and the items to measure those dimensions were determined. After conducting the reliability and validity work, the survey took its final shape and was structured as in the following: Attitudes (7 items), Subjective norm (2 items), Perceived Behavioral Control (3 items), Behavioral Beliefs (14 items), Normative Beliefs (9 items), and Control Beliefs (13 items). In addition to that, an item for students' intention to smoke and an item for their smoking behavior were also included. The analyses conducted for the reliability of the survey showed that the Cronbach's Alpha coefficients were at the acceptable level. The results of this research support the view that the survey could be used as a reliable and valid tool of measurement.

Survey for Describing Students' Smoking Behavior may be used by field experts working on secondary education students' smoking behaviors and on factors determining their behaviors. Thus, it may contribute to precautions to be taken for hindering their smoking. At the same time, with the use of this measurement tool-which was prepared to suit the economic, environmental and social life conditions of Turkey- it will be possible to describe how it differs from the conditions of societies in which smoking behavior was analysed from the socio-psychological perspective and in which smoking is less. In the next research, plans are made to apply the survey to larger samples and to determine students' smoking behaviors as well as the factors influential in those behaviors in more details. In addition, to that, variables as to gender, age, whether or not family members smoke will be used and thus the factors affecting students' smoking behaviors will be researched from various perspectives. It is thought that the research will make contributions to taking the measures to remove the factors causing students to smoke, and will shed light on doing the required regulations.

References

Ajzen, I. (1985). *From intentions to actions: A theory of planned behavior*. Action-control: From cognition to behavior. Kuhl, J. and Beckmann, J. (eds.), Springer, Heidelberg. pp. 11-39.

Ajzen, I. (2005). *Attitudes, personality and behavior* (2nd Edition), McGraw-Hill, Milton-Keynes, England: Open University Press.

Buyukozturk, S. (2006). *Sosyal Bilimler İçin Veri Analizi El Kitabı*. Pegem Yayınları, Ankara.

Frey, D., Stahlberg, D. & Gollwitzer, P.M. (1993). *Einstellung und Verhalten: Die Theorie des überlegten Handelns und die Theorie des geplanten Verhaltens*. Kognitive Theorien der Sozialpsychologie, Frey, D. und Irle, M. (Hrsg.), Bern:Huber, Band I, s.368-398.

Kalayci, S. (2006). *SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri*. Asil Yayın ve Dağıtım, Ankara.

Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistics (2nd ed.). New York: Harper & Row.

World Health Organization (2003). The world health report 2003 - shaping the future. Retrieved November 21, 2011 from the web: http://www.who.int/whr/2003/en/

World Health Organization (2005). The role of health Professionals in tobacco control. Retrieved November 21, 2011 from the web: http://www.paho.org/english/ad/sde/ra/bookletWNTD05.pdf

World Health Organization (2008). WHO Report on the Global Tobacco Epidemic, 2008. Retrieved November 21, 2011 from the web: http://www.who.int/tobacco/mpower/mpower_report_full_2008. pdf