



**Effect of Health Warnings on Cigarette Pockets on Behaviour:
Educational Perspective**

Cem GERCEK¹ Nuri DOGAN² Ceylan GUNDEGER² Levent YAKAR²

ARTICLE INFO

Article History:

Received: 12 November 2016

Received in revised form: 10 March 2017

Accepted: 21 March 2017

DOI: <http://dx.doi.org/10.14689/ejer.2017.68.4>

Keywords

cigarettes
cigarette packet
health warning
behaviour
fear
health education

ABSTRACT

Purpose: Health warnings printed on cigarette packets are an important vehicle in that they demonstrate and inform people of the threats and health risks related to smoking. Increasing the effectiveness of this vehicle is one of the purposes of this study. **Research Methods:** Since this research aims to describe the associations between dependent and independent variables and determine whether or not independent variables influence dependent variables, it is a correlational study in the category of descriptive research. The research group was composed of 848 randomly chosen undergraduate students. The data were collected through a questionnaire used in similar research. Path analysis and logistic regression analysis were employed in the analysis of the data.

Findings: According to the findings, the variables of response efficacy, self-efficacy, probability of harm and the severity of harm have high rates of explanation in both groups, but are higher in the combined warning group. It is apparent that the severity of harm and probability of harm will not be influential in behaviours in both groups without the variable of the instrument of fear. The reason for this is that fear can be associated with the function of the moderator. **Implications for Research and Practice:** In conclusion, it may be stated that the written text warnings and combined warnings printed on cigarette packets can be influential (and combined warnings are more influential) in preventing individuals from smoking. Enlarging this project and applying it to different groups is important in terms of understanding the durability of the relevant behaviour.

© 2017 Ani Publishing Ltd. All rights reserved

¹ Hacettepe University, Mathematics and Science Education, TURKEY

² Hacettepe University, Division of Educational Measurement and Evaluation TURKEY

Corresponding Author: Cem GERCEK, Hacettepe University, Faculty of Education, cgercek@hacettepe.edu.tr

Introduction

Tobacco, usually consumed in the form of cigarettes, is one of the most widespread addictive substances in the world (American Cancer Society, 2006; Ertekin & Cakmak, 2001). When considered globally, half of men and one tenth of women consume tobacco products. Only a small portion of smokers give up smoking (Dogan, 2001). It is predicted that deaths caused by tobacco will doubled and thus will climb up to 10 million in the next 20-30 years. Furthermore, if the trend continues in this way, a billion people will lose their lives from tobacco use in the 21st century. It is worrying that these deaths will happen primarily to people who are younger than 70 years old and from developing countries (Fidan, Sezer, Demirel, Kara & Unlu, 2006; Prabhat, Phil & Peto, 2014). Tobacco use is the leading cause of death in the world. Five million people died due to tobacco use in the world in 2009. This is more than the total deaths caused by tuberculosis, HIV/AIDS and malaria combined. Tobacco use causes 18 different illnesses in addition to 10 different types of cancer (Ogel, Coraplioglu & Sir, 2004; Telli, Aytemur, Ozol & Sayiner, 2004).

In Spain, most deaths stem from cigarette smoking. In England, the number of people who died due to smoking is ten times higher than the number who died in the Second World War. According to the data offered by the Lung Association, more than 400,000 people, including smoking mothers' premature babies and passive smokers, are impacted by diseases caused by cigarettes every year in the USA. The U.S. spends over 2 million dollars on the treatment of these diseases (Lindstrom, 2008). Turkey is one of the leading countries in the world in terms of cigarette consumption (Yorgancioglu & Esen, 2000). The reason for this is that tobacco use has become part of cultural tradition rather than habit (Kaya & Cilli, 2002). Research conducted by the Ministry of Health in 2010 demonstrated that 48% of men and 15% of women smoke in Turkey (Ministry of Health, 2010). Therefore, it is thought that 100,000 people lose their lives every year due to illnesses caused by smoking (Erguder, 2008). The situation is similar in many parts of the world. For this reason, the need to conduct international studies and to take necessary precautions such as printing health warnings on cigarette packets has been recognised. Health warnings concerning public health were determined in accordance with article 11 of the framework convention of tobacco control of the World Health Organisation (WHO). More than 165 countries have confirmed the convention so far (Ministry of Health, 2008).

In 2001, Canada was the first country in the world to print a combined (text and graphic) warning covering 50% of a cigarette packet. Canada also determined warnings in addition to the ones recommended by the Framework Convention on Tobacco Control (FCTC) and printed them on cigarette packets. The recommendation that combined warnings should cover at least 50% of a cigarette packet made by the FCTC was put into practice by more than 30 countries. Turkey signed the FCTC in 2004. Accordingly, it was made obligatory in Turkey to print written warnings that cover 30% of the front surface and 40% of the back surface of cigarette packets in 2006, which was followed by mandatory printing of combined warnings in 2011. Furthermore, the EU demanded that written warnings covering 30% of the front and

40% of the back of cigarette packets be printed in 2003. It was reported that those new written warnings raised awareness in smokers and that detailed written warnings helped to increase the level of perception of health risks (Hammond, 2011).

Many research studies proved the effectiveness of photos and images on cigarette packets in health education. Thus, health warnings on packets are referred to as potential vehicles that positively affect individuals' attitudes and behaviours (Strahan, White & Fong, 2002). Ozsahin et al. (2007) conducted a study on 3342 patients who consulted the Family Practice Centres of Baskent and Adana Universities in order to quit smoking. The results indicated that 25% of women quit smoking for no stated reason, whereas 30% quit due to health problems or doctors' advice. The study also showed that 45% quit smoking because of mass media or anti-smoking campaigns. On the other hand, it was found that 10% of men quit smoking for no stated reason, 60% due to health problems or doctors' advice, and 25% because of mass media or campaigns.

Tobacco control experts emphasise that combined health warnings should be ensured to stimulate a strong negative instinctive reaction in smokers and non-smokers, and that these warnings reduce the potential attractiveness of cigarette packets. It was made obligatory in Australia in 2006 to print combined warnings on cigarette packets. In a long-term study performed with 7-12th-grade students, it was found that the warnings had been read, attracted attention, made the subjects think about the issue and led to relevant discussion (White, Webster & Wakefield, 2008). Hymowitz, Cummings, and Hyland (1997) tried for five years to identify why 13,415 people had quit smoking. Individuals included in their research reported their reasons for quitting smoking were most of all health problems (91%), the price of cigarettes (60%), their exposure of others to cigarette smoke (56%), and the wish to set a model in the family (55%). Some experimental research shows that combined warnings are more influential than written text warnings in discouraging new smokers and making smokers quit (Sabbane, Bellavance & Chebat, 2009). For instance, in research conducted in China in 2008, smokers reported that combined warnings were more influential than written warnings in motivating people to quit smoking and to prevent youth from smoking (Fong, Hammond & Yuan, 2010).

Smokers report that health warnings on cigarette packets raise awareness (Alaouie, Afifi, Haddad, Mahfoud & Nakkash, 2015). Data obtained from cohort studies showed that in many countries knowledge about cigarettes is learned from the warning printed on cigarette packets rather than from television or other sources. In Thailand, Australia and Uruguay, for instance—where large combined warnings are printed on cigarette packets—85% of smokers pointed to cigarette packets as sources of information on health. Findings showed that warnings with small writing might not be remembered (Hammond, 2011). Hammond reported that more than 90% of Canadian young people were considerably informed on the effects of smoking on health and that smoking became less interesting to youth 6 years after the obligation to print warnings on cigarette packets was introduced. Hammond (2011) points out that similar results were obtained in other research studies performed in Canada. Research on the effects of written and combined warnings on

the Internet, which was conducted with 296 non-smoker secondary school students, found that combined warnings were more effective in improving memory and in triggering it (Hammond, 2011). In research conducted by Ozkaya, Edinsel Ozkaya and Hamzacebi (2009), students analysed all the warnings on cigarette packets carefully and considered them very important. It was found accordingly that 38.9% of the participants thought the warnings to be positive, whereas 61.1% thought that they would not have positive impacts. Of these students, 22.5% quit smoking after they had read the warnings, 44.4% were affected by the warnings but did not stop smoking, and 33.1% were not influenced by the warnings and continued smoking.

Health warnings on cigarette packets are important instruments in that they exhibit the health threats introduced by smoking. An individual smoking a packet of cigarettes a day has the opportunity to see the warnings about 7,000 times a year. The warnings on the packets are considered stimulants of fear. A stimulant of fear is a persuasive message activating the receptors in an individual against threats affecting his/her life in a negative way (Johnston & Warkentin, 2010; Rogers, 1975). On examining the models developed in relation to the effects of the stimulants of fear, variables such as severity, probability of harm, severity of harm, response efficacy and self-efficacy are observed.

Protection Motivation Theory (PMT)

One of the studies concerning Protection Motivation Theory was performed by Rogers (1975), who considered the variables of severity, fragility and efficacy of response in the theory. Maddux and Rogers (1983) regulated the model for the theory. The difference in the re-specified model was that it also took the variable of self-efficacy into consideration. In their research describing the associations between the variables of the PMT, Ruitter, Abraham and Kok (2001) reported significant correlations between self-efficacy, efficacy of response and behaviour. Conducted meta-analyses confirm the PMT and indicate that variables have significant effects on behaviours (Floyds, Dunn & Rogers 2000; Milne, Sheeren & Orbell, 2000). Tanner, Hunt and Eppright (1991) presented evidence that threat prediction and coping processes were composed of an interrelated series. Their research also offered evidence that if individuals perceived the severity of harm and probability of harm at high levels, the incident would result in a feeling of fear stemming from threat prediction. Arthur and Quester (2004) re-considered the PMT and extended it. The PMT that had been specified by Arthur and Quester (2004) also considers the variables of self-efficacy and efficacy of response on top of probability of harm and severity of harm (see Figure 1).

Figure 1. Arthur and Quester's (2004) Protection Motivation Theory

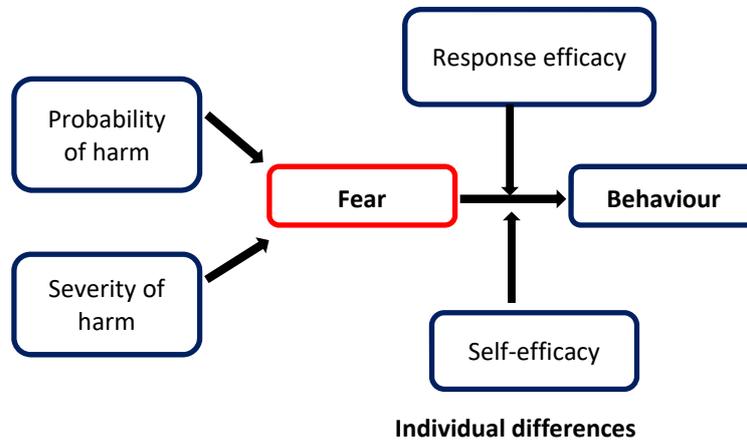


Figure 1. Arthur and Quester's (2004) Protection Motivation Theory

According to Arthur and Quester (2004), fear is a mediating variable that carries impact of severity of harm and probability of harm to behaviour. It is predicted that self-efficacy and efficacy of response will result in modification of behaviour. The authors tested their revised theory under different circumstances. As a consequence, they found that the model fitted well and that there were significant associations between the components. However, the effects of response efficacy were not confirmed in the model, except for some special circumstances. The PMT was based on the stimulants of fear approach. Many studies conducted in foreign countries were performed on the basis of PMT (Milne et al., 2000). Although there are studies conducted to understand the effect of such stimulants on smoking behaviour, there is no research considering the PMT in Turkey.

Research Problem

This study analyses the effects of written text warnings and combined warnings printed on cigarette packets on smoking behaviour in terms of various variables such as the severity of harm, probability of harm, fear, and efficacy of response. Accordingly, the sub-problems were stated as follows:

1. What are the path coefficients in the path analysis of the variables for the written text and combined warning groups?
2. At what levels do the scale scores of fear, severity of harm, probability of harm, efficacy of response, self-efficacy and behaviour predict smoking or not smoking?

Method

Since this study aims to describe the associations between dependent and independent variables and whether or not independent variables influence dependent variables, it is a correlational study in the category of descriptive research.

Research Sample

The research was conducted with 872 participants who were randomly chosen from university students. Of the participants, 77% were female and 23% were male students. In the selection of the participants, the number of students in each faculty was taken into consideration, and care was taken to include a large enough number of students to represent each faculty. Because the questionnaire was long, volunteers were asked to take part in the application. Yet, some of the individuals were excluded from the research because they did not give answers to some questions or they gave systematic answers despite the precautions. Consequently, the research was conducted with 848 students.

Research Instrument, Validity and Reliability

The data were collected with a questionnaire that had been used by Petersen and Lieder (2006) in a similar study. The questionnaire was composed of two parts and 66 items in total. The first part contained items about demographic properties (such as age, gender, grade level and whether or not he/she smokes), and the second part contained items about dependent and independent variables. The questionnaire was first translated into Turkish, and then reliability and validity analyses were performed. The questionnaire was translated by four field experts and two language experts. After the necessary adjustments were made, the questionnaire was reviewed and checked grammatically by a Turkish language expert. Later, the questionnaire was back-translated into the original language by two experts. The resulting two questionnaires were compared, and thus the final shape was given to the Turkish version. The reliability research found that the internal consistency coefficient calculated for each variable ranged between 0.53 and 0.98, that it had an internal consistency at an acceptable level in measurements for the variable of behaviour, and it had an internal consistency at high levels for the other variables. For validity research, the measurement model for each variable was tested with confirmatory factor analysis, and it was found that construct validity was attained. In the goodness of fit statistics for the models established for the variables, AGFI was found to be between 0.92 and 0.99, RMSEA to be between 0.041 and 0.074, CFI to be between 0.92 and 1.00 and χ^2/df to be between 2.50 and 3.02. It was seen in this study that the internal consistency coefficients calculated for each variable were between 0.71 and 0.98, that the internal consistency was at acceptable levels for measurements for the variable of behaviour and in a similar vein that the other variables had an internal consistency at high levels. The measurement model for each variable was tested through confirmatory factor analysis in the validation stage of the research, and thus it was found that construct validity was achieved. It was also found that the goodness of fit statistics for the models established were as follows: AGFI between 0.79 and 0.95, RMSEA between 0.09 and 0.75 and CFI between 0.98 and 1.00.

Similarly, explanatory factor analysis was done for each variable, and the internal consistency coefficient was calculated for reliability. The analysis results of the dependent variable were as follows:

- In the variable of fear, the first dimension accounted for 77% of the total variance, and it displayed a one-dimensional structure. The factor loads of the items in this variable ranged between 0.84 and 0.92 and Cronbach's alpha internal consistency coefficient was 0.96.

The analysis results of the independent variables were as follows:

- In the severity of harm variable, the first dimension accounted for 87% of the total variance and it displayed a one-dimensional structure. The factor loads of the items in this variable ranged between 0.90 and 0.95, and Cronbach's alpha internal consistency coefficient was 0.98.
- In the probability of harm variable, the first dimension accounted for 75% of the total variance and it displayed a one-dimensional structure. The factor loads of the items in this variable ranged between 0.80 and 0.90, and Cronbach's alpha internal consistency coefficient was 0.95.
- In the efficacy of response variable, the first dimension accounted for 84% of the total variance and it displayed a one-dimensional structure. The factor loads of the items in this variable ranged between 0.89 and 0.93, and Cronbach's alpha internal consistency coefficient was 0.97.
- The variable of self-efficacy displayed a two-dimensional structure, and the two dimensions accounted for 72% and 5% of the total variance, respectively. The factor loads of the items on the first dimension were between 0.71 and 0.84, whereas the factor loads of the items on the second dimension were between 0.60 and 0.84. Cronbach's alpha coefficients were 0.97 for the first dimension and 0.98 for the second dimension.
- The variable of behaviour was considered separately for smokers and for non-smokers, and the first dimension accounted for 66% of the total variance for smokers and 57% for non-smokers, and they displayed a one-dimensional structure within their respective categories. The factor loads of the items in this variable were between 0.75 and 0.85, and Cronbach's alpha internal consistency coefficient was 0.89 for smokers and 0.71 for non-smokers.

Research Procedure

The students participating in the research were divided almost equally into two groups. By drawing lots, one of the groups was impartially assigned to be the written text warning group (A; 469), and the other to be the combined warning group (B; 379). For the education stage of the research, six written and six combined warnings were chosen impartially from 14 warnings determined by the Tobacco and Alcohol Market Regulatory Authority (TAMRA) (TAMRA, 2013). The selected warnings were placed on off-brand cigarette packets. The impartially selected warnings for the A and B groups were: "Protect children: Do not make them inhale your smoke," "Carcinogens such as benzene, nitrosamine, formaldehyde, and hydrogen cyanide

are present in cigarette smoke," "Smoking causes fatal lung cancer," "Smoking makes skin age earlier," "Smoking blocks blood vessels, and it causes heart attacks and paralysis," "Smokers die at a younger age," "Smoking causes painful and slow deaths." Figure 2 shows examples prepared for the A and B warning groups. Next, the packets were prepared for the A and B groups separately in the form of presentations. Having received the permissions required, the written text warning presentation for group A and the combined warning presentation for group B were given in the classrooms for 25 minutes each. The questions asked were answered in both groups before and after the presentations. At the end of the presentations, students' thoughts and feelings were obtained through a questionnaire distributed to them. The administration lasted approximately one class hour. The application of the research was performed between September 2014 and April 2015.



Example of Written Text Warning Example of Combined Warning

Figure 2. Examples of Written Text and Combined Warnings Used in the Study

Data Analysis

Path and logistic regression analyses were performed for the solution of the first and second sub-problems, respectively. Path analysis aims to make parameter estimations by means of the solution of a system of equations by using multiple regression or linear algebra. Thus, the partial effects of exogenous variables on endogenous variables are represented with standardised regression coefficients (Cokluk, Sekercioglu & Buyukozturk, 2010). Analysis results were considered separately for each model; and regression coefficients, Wald values, the significance

levels of Wald values and the percentages of accurate classification were used for evaluating the significance of the models and the variables.

Results

Table 1 shows the correlations between variables as well as the averages and standard deviations for the variables. As expected, it may be said that there is a positive and significant correlation between fear and the severity of harm variables ($r= 0.563$) at the 0.01 error level and that the variable has significant but low level correlations with the other variables. The correlation between the variables of self-efficacy and behaviour was found to be positive as expected and significant at the error level of 0.01 ($r= 0.628$).

Table 1.

Correlations between Variables, the Averages and Standard Deviations for the Variables

Stimulants	Fear	Severity of harm	Probability of harm	Efficacy of response	Self-efficacy	Behaviour
Fear	1,000	,563**	,198**	,099**	,180**	,116**
Severity of harm		1,000	,084*	,152**	,211**	,185**
Probability of harm			1,000	,079*	-,069	-,135**
Efficacy of response				1,000	,135**	,110**
Self-efficacy					1,000	,628**
Behaviour						1,000
Averages	26,76	36,76	18,98	30,84	77,04	16,44
Std deviations	22,234	24,665	15,663	21,136	20,062	5,006

* $p < 0,05$ ** $p < 0,01$

According to the results of the path analysis:

- The chi-square calculated for the written text warning group (A) was 10.08, and the degree of freedom (*df*) was 4. Accordingly, the ratio of chi-square to *df* was 2.52. The ratio – which is below 3 – perfectly indicates the model-data fit. On examining the RMSEA calculated for the written text group, a fit index at the level of 0.063 is seen. The fact that the index is below 0.07 also shows a good fit in terms of the model data fit (Cokluk et al., 2010; Steiger, 2007).

- The chi-square calculated for the combined warning group (B) was 14.88, and the degree of freedom (*df*) was 4. Accordingly, the ratio of chi-square to *df* was 3.72. The fact that the ratio is below 5 and above 3 indicates a medium level of model fit (Cokluk et al., 2010; Sumer, 2000). On examining the RMSEA calculated for the combined warnings group, it was found that a fit index was at the level of 0.095. The fact that the index is below 0.1 shows that the fit is not high but is at an acceptable level (Cokluk et al., 2010; Kelloway, 1989).

Table 2 shows the standardised values for the written text (A) and the combined warning (B) groups in accordance with the purpose of the research. A close examination of Figure 3 makes it clear that the path coefficient between fear and the severity of harm (β : 0.49; $t > 1.96$) for the written text warnings group (A) and the path coefficient between fear and the probability of harm (β : 0,21; $t > 1,96$) are statistically significant. Accordingly, it may be said that as the severity of harm and/or probability of harm increase(s), there may be significant increases in fear. The probability of harm and severity of harm together explain 31% of the variable of fear. Therefore, it may be said that perceptions of the probability of harm and severity of harm explain fear at high levels. In addition to that, the path coefficient for the severity of harm is -0.0026 ($t < 1.96$), and the path coefficient for the probability of harm is -0.0011 ($t < 1.96$) without the variable of fear. According to these findings, it is evident that there is no direct effect on the severity of harm and probability of harm on behaviour.

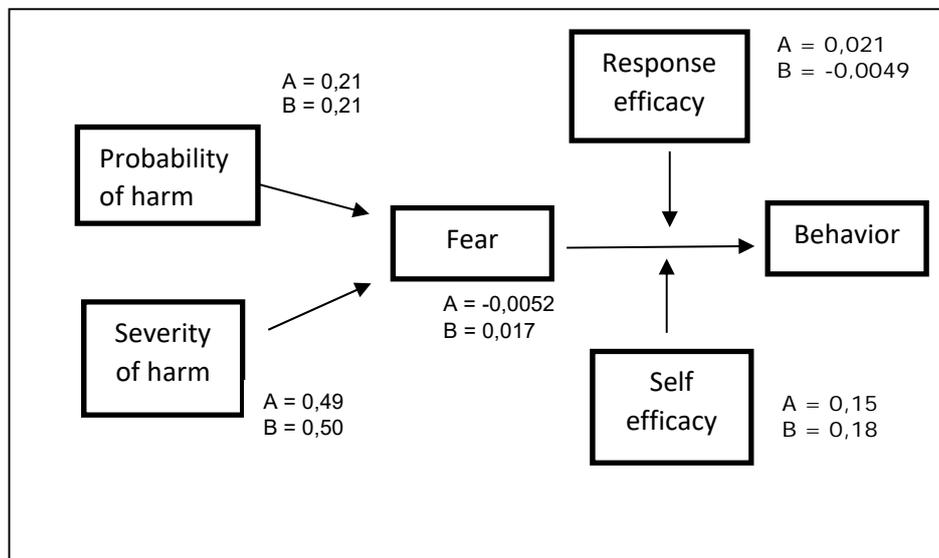


Figure 3. Standardised Path Coefficients (A: Written Text Warnings Group, B: Combined Warnings Group)

It is apparent that the path coefficient calculated for fear and behaviour in group A is -0.0052 ($t < 1.96$), which is not statistically significant. Yet, the path coefficient calculated for self-efficacy and behaviour ($\beta: 0,15$; $t > 1.96$) and the path coefficient for response efficacy and behaviour ($\beta: 0,02$; $t > 1.96$) are statistically significant. These three variables altogether explain 40% of the variable of behaviour, which may be interpreted to be high. Accordingly, it may be said that the variables of fear, self-efficacy and response efficacy altogether have important effects on the emergence of behaviour in the written text warning group.

As is clear from Figure 3, the path coefficients calculated for fear and the severity of harm ($\beta: 0.50$; $t > 1.96$) and for fear and the probability of harm ($\beta: 0.21$; $t > 1.96$) in the combined warnings group (B) are statistically significant. Accordingly, it may be said that fear can also increase significantly as the severity of harm and/or the probability of harm increase(s). The probability of harm and severity of harm together explain 38% of the variable of fear. Thus, it may be said that the perceptions of probability of harm and severity of harm explain fear at a high level. In addition to that, the path coefficient of the severity of harm and the path coefficient of the probability of harm to behaviour are 0.0083 ($t < 1.96$) and 0.0035 ($t < 1.96$), respectively. According to these findings, it may be said that the severity of harm and the probability of harm are not influential in behaviour without the variable of fear.

It is clear from Figure 3 that the path coefficient for fear and behaviour is 0.017 ($t < 1.96$), the path coefficient for response efficacy and behaviour is -0.0049 ($t < 1.96$) and that they are not statistically significant. The coefficient for self-efficacy and behaviour, on the other hand, is 0.18 ($t > 1.96$), and this is statistically significant. These three variables altogether explain 46% of the variable of behaviour, which may be said to be a high rate. Accordingly, it may be interpreted that the variables of fear, self-efficacy and response efficacy altogether have important effects on the emergence of behaviour.

In the solution of the second sub-problem of the research, the students' scale scores (fear, the severity of harm, the probability of harm, response efficacy, self-efficacy and behaviour) were considered as independent variables and whether students smoked or not was considered as the dependent variable in the logistic regression analysis. Table 2 shows the results for the logistic regression analysis. Table 2 shows the regression coefficients (B) calculated for the scale scores, Wald statistics, freedom degrees, significant levels (p) and odds rates. An examination of the significance levels of Wald statistics and the direction of B coefficients shows that the probability of harm is positive and significant at the level of 0.01 and self-efficacy and behaviour are negative and significant at the level of 0.01, whereas all other variables are not significant based on the Wald values.

Table 2.

The Results for Logistic Regression Analysis in Relation to Whether Students Smoke or Do Not Smoke

<i>Stimulants</i>	<i>B</i>	<i>Standard deviation</i>	<i>Wald statistics</i>	<i>Degree of freedom</i>	<i>p</i>	<i>Odds rates</i>
Fear	-0,002	0,013	0,038	1	0,845	0,998
Severity of harm	-0,016	0,012	1,770	1	0,183	0,985
Probability of harm	0,046	0,014	10,013	1	0,002	1,047
Response efficacy	-0,001	0,012	0,003	1	0,955	0,999
Self-efficacy	-0,050	0,010	22,796	1	0,000	0,951
Behaviour	-0,354	0,048	54,852	1	0,000	0,702
Constant	5,803	0,840	47,683	1	0,000	331,275

Accordingly, the regression equation of independent variables for the dependent variable can be formed as followings:

$$U = 5.80 + (-0.002*\text{fear}) + (-0.016*\text{severity of harm}) + (0.046*\text{probability of harm}) + (-0.001*\text{response efficacy}) + (-0.05*\text{self-efficacy}) + (-0.354*\text{behaviour}) + \text{error}$$

With the U value being calculated for a student with the help of this equation, the students' probability of smoking can be found. The value of the probability obtained can be compared with the 0.50 criterion, and thus students can be grouped. Thus, participants with a probability of .50 or larger were classified as smokers, and those with probabilities smaller than .50 were classified as non-smokers. It is clear from Table 2 that the variables of the probability of harm, self-efficacy and behaviour are statistically significant in predicting whether or not individuals smoke ($p < 0.01$), but that the variables of fear, the severity of harm and response efficacy are not statistically significant ($p > 0.05$).

It is also apparent from the analysis results that the rate of explained variance is 0.734 according to Nagelkerke R2 value. This coefficient shows that it explains approximately 73% of the variance in the dependent variable for the case of smoking with the model established. It would be useful to state that independent variables' rate of explaining the dependent variable is high. On the other hand, based on the equation formed, 97.5% of non-smokers and 71.6% of smokers can be grouped accurately, which results in a mean of 94.4% correct classification for the combined groups. It may be said the rate of classification is quite high.

Discussion and Conclusions

Previously conducted studies emphasise that the fear stimulants on cigarette packets are important (Alaouie et al., 2015). This study found that the path coefficients from the probability of harm and the severity of harm to fear are significant for both groups. Accordingly, as the severity of harm and the probability of harm increase, fear can also significantly increase. The probability of harm and the severity of harm variables explain 31% of the variable of fear in the written text warnings group, and 38% in the combined warnings group. Accordingly, the probability of harm and the severity of harm variables have high levels of effectiveness rates among both groups, but the rate is higher in the combined warnings group. It is also apparent that the severity of harm and the probability of harm variables cannot be influential in behaviour in both groups without fear. When fear, self-efficacy and response efficacy variables are considered together, they explain 40% of the variance in behaviour in the written text warnings group and 46% of the variance in the combined warnings group. Research reports made it clear that the combined warnings were read and noticed by more by smokers (Alaouie et al., 2015; Kees, Burton, Andrews & Kozup, 2010). Our research results are also consistent with the ones in the literature. On the other hand, self-efficacy and response efficacy variables have important influences on the emergence of behaviour. Strahan et al. also reported that health warnings on cigarette packets are a potential vehicle affecting individuals' attitudes and behaviours in positive ways (Strahan et al., 2002; White et al., 2008). On the other hand the reason why the severity of harm and the probability of harm are not influential in behaviour in the absence of fear is that fear can be considered as having a moderator function for smoker and non-smoker students (Glock & Kneer, 2009). According to Arthur and Quester (2004), the emergence of fear depends on fear stimulants—the severity of harm and probability of harm—and it takes on the duty of a mediator variable among the variables. Although the fear warning on cigarette packets are important, it is observed in studies that both the written text warning and the combined warnings fail to persuade individuals into the expected behaviour. This research has also obtained similar results. According to cognitive inconsistency theory, smokers ignore reality while using tobacco, and they even prohibit it from their sub-consciousness (Festinger, 1957). Moreover, many addicts tend to underestimate the illnesses caused by tobacco use. Thus, individuals keep smoking although they know that smoking is harmful. This denial might have removed the fear aroused in the research and prevented participants from acquiring the relevant behaviour. In conclusion, it may be stated that the written text warnings and combined warnings printed on cigarette packets can be influential (combined warnings are more influential) in preventing individuals from smoking. Enlarging this project and applying it to different groups is important in terms of understanding the durability of the relevant behaviour.

Acknowledgements

The preparation of this manuscript was supported in part by Scientific Research Projects Coordination Unit under Contract 013-D02-704-001.

References

- Alaouie, H., Afifi, R.A., Haddad, P., Mahfoud, Z., & Nakkash, R. (2015). Effectiveness of pictorial health warnings on cigarette packs among lebanese school and university students. *Tobacco Control*, 24, e72-e80. doi:10.1136/tobaccocontrol-2012-050745
- American Cancer Society, (2006), *The Tobacco Atlas*. Retrieved November 11, 2014 from http://www.cancer.org/docoot/AA/content/AA_2_5_9x_Tobacco_Atlas.asp
- Arthur, D., & Quester, P. (2004). Who's afraid of that ad? applying segmentation to the protection motivation model. *Psychology & Marketing*, 21 (9), 671-696.
- Cokluk, O., Sekercioglu, G., & Buyukozturk, S. (2010). *Sosyal bilimler için çok değişkenli istatistik [Multivariate statistics for the social sciences]*. Ankara, Turkey: PegemA.
- Dogan, O. (2001). The prevalence of substance use among high school students in sivas. *Journal of Dependence*, 2 (2): 53-56.
- Erguder, T. (2008). *Tütün kontrolü çerçeve sözleşmesi: küresel sağlık için küresel eylem [Framework convention on tobacco control: Global action for global health]*. Sağlık Bakanlığı-Temel Sağlık Hizmetleri Genel Müdürlüğü [Ministry of Health-General Directorate of Primary Health Care], Ankara.
- Ertekin, G., & Cakmak, D. (2001). A study for substance culture. *Journal of Dependence*, 2 (1), 16-20.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Fidan F., Sezer M., Demirel R., Kara Z., & Unlu M. (2006). Smoking status of teachers and their attitudes about smoking restriction. *Turkish Thoracic Journal*, 7 (3): 196-199.
- Floyds, D., Dunn, S., & Rogers, R. (2000). A meta-analysis of research on protection motivation theory. *Journal of Applied Social Psychology*, 30 (2), 407-429.
- Fong, G.T, Hammond, D., & Yuan, J. (2010). Perceptions of tobacco health warnings in china compared to picture and text-only health warnings from other countries: an experimental study. *Tobacco Control*, 19 (Suppl 2), i69-i77.
- Glock, S., & Kneer, J. (2009). Are deterrent pictures effective? The impact of warning labels on cognitive dissonance in smokers, *Applied Psychology: Health And Well-Being*, 2009, 1 (3), 356-373.
- Hammond, D. (2011). Health warning messages on tobacco products: a review. *Tobacco Control*, 20, 327-337.
- Hymowitz N., Cummings K.M., & Hyland A. (1997). Predictors of smoking cessation in a cohort of adult smokers followed for five years. *Tobacco Control*, 6, 57-62.
- Johnston, A., & Warkentin, M. (2010). Fear appeals and information security

- behaviors. *MIS Quarterly*, 34 (3), 549-566.
- Kaya, N. & Cilli, A. (2002). 12 Month prevalence of nicotine, alcohol and substance dependence among university students. *Journal of Dependence*, 3 (2): 91-97.
- Kees J, Burton S, Andrews, J.C., & Kozup, J. (2010). Understanding how graphic pictorial warnings work on cigarette packaging. *Journal of Public Policy and Marketing*, 29 (2),115-126.
- Lindstrom, M. (2008). *Buy.ology*. İstanbul, Turrkey: Optimist.
- Maddux, J., & Rogers, R. (1983). Protection motivation and self-efficacy: a revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19, 469-479.
- Milne, S., Sheeren, P., & Orbell, S. (2000). Prediction and intervention in health-related behavior: A meta-analytic review of protection motivation theory. *Journal of Applied Social Psychology*, 30 (1), 106-143.
- Ogel, K., Corapcioglu, A., & Sir, A. (2004). Tobacco, alcohol and substance use prevalence among elementary and secondary school students in nine cities of turkey. *Turkish Journal of Psychiatry*, 15(2): 112-118.
- Ministry of Health, (2010). *Küresel Yetişkin Tütün Araştırması Türkiye Raporu. [Global Adult Tobacco Survey: Turkey Report]*, (Report No: 803). Retrieved March 10, 2014 from http://havanikoru.org.tr/dosya/Docs_Tutun_Dumaninin_Zararlari/KYTA_Kitap_Tr.pdf
- Ministry of Health, (2008). *The WHO framework convention on tobacco control* (Report No: 731). Retrieved December 15, 2013 from www.sbu.saglik.gov.tr/Ekutuphane/kitaplar/t20.pdf
- Ozkaya, Ş., Edinsel, Ş., Ozkaya, E., & Hamzacebi, H. (2009). Effects of new warning labels on cigarette packets among high school adolescents. *Tuberculosis and Thorax*, 57 (3): 327-332.
- Ozsahin, K., Unsal, A., Erdogan, F., Geriklioglu, Ç., Bakar, C., & Tokalak, İ, (2007). Factors effective on smoking cessation: a study on family practice patients. *TAF Preventive Medicine Bulletin*, 6 (3), 181-186.
- Petersen, L., & Lieder, F. (2006). The Effectiveness of written and graphic health warnings on cigarette packs: an examination of the revised model of protection motivation. *Social Psychology*, 37 (4), 245-258.
- Rogers, R. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91, 93-114.
- Prabhat, M.D., Phil, D., & Peto, P. (2014). Global effects of smoking, of quitting, and of taxing tobacco, *New England Journal of Medicine*, 370, 60-68.
- Ruiter, R., Abraham, C., & Kok, G. (2001). Scary warnings and raitonal precautions: a review of the psychology of fear appeals. *Psychology and Health*, 16, 613-630.
- Sabbane, L. I., Bellavance, F., & Chebat, J.C. (2009). Recency versus repetition priming

effects of cigarette warnings on nonsmoking teenagers: the moderating effects of cigarette-brand familiarity. *Journal of Applied Social Psychology*, 39 (3), 656-682.

Strahan EJ, White K., & Fong GT. (2002). Enhancing the effectiveness of tobacco package warning labels: a social psychological perspective. *Tobacco Control*, 11 (3), 183-190.

TAMRA, (2013). *Written and combined warnings*. Retrieved July 10, from <http://www.tapdk.gov.tr/tr/piyasa-duzenlemeleri/tutun-mamulleri-piyasasi.aspx>

Tanner, J., Hunt, J., & Eppright, D. (1991). The protection motivation model: a normative model of fear appeals. *Journal of Marketing*, 55 (July), 36-45.

Telli C., Aytemur Solak Z., Ozol D., & Sayiner A. (2004). Smoking habits among newly registered university students. *Eurasian Journal of Pulmonology*, 6 (3): 101-106.

Yorgancioglu A., & Esen A. (2000). Nicotine dependence and physicians. *Turkish Thoracic Journal*, 1 (1): 90.

White V, Webster B., & Wakefield M. (2008). Do graphic health warning labels have an impact on adolescents' smoking related beliefs and behaviours? *Addiction*, 103 (9), 1562-1571.

Sigara Paketleri Üzerindeki Sağlık Uyarılarının Davranışa Etkisinin Değerlendirilmesi: Eğitimsel Bir Yaklaşım

Atıf: Gercek, C., Dogan, N., Gündeğer, C., & Yakar, L. (2017). Effect of health warnings on cigarette packets on behaviour: Educational perspective. *Eurasian Journal of Educational Research*, 68, 63-80. DOI: <http://dx.doi.org/10.14689/ejer.2017.68.4>

Özet

Problemin Durumu: Dünyada sigara tüketimi bakımından başta gelen ülkelerden biri de Türkiye'dir. Bunun nedeni tütün kullanımının alışkanlıktan çok geleneksel hale gelmesidir. Dünya ölçeğinde ele alındığında, günümüzde halen erkeklerin yarısı, kadınların ise onda biri tütün ürünleri kullanmaktadır. Tütünün neden olduğu ölümlerin 20-30 yıl içinde iki katına yani 10 milyona çıkması öngörülmektedir. Bu şekilde devam ederse yaşadığımız yüzyılda ise tütün kullanımından bir milyar kişinin hayatını kaybedeceği düşünülmektedir. Bu ölümlerin 70 yaşından önce ve gelişmekte olan ülkelerde olacağı öngörülmesi ayrı bir kaygı verici noktadır.

Yapılan birçok araştırmada sigara paketleri üzerinde fotoğraf ve imgelerin kullanılmasının sağlık eğitiminde etkinliği gösterilmiştir. Paketler üzerindeki sağlık uyarıları bireyde tutum ve davranışı olumlu yönde etkileyen potansiyel bir araç olarak gösterilmektedir. Başkent ve Adana Üniversiteleri Aile Hekimliği Polikliniklerine başvuran 3342 hasta üzerinde yapılan araştırmada kadınların %25'inin nedensiz, %30'unun sağlık sorunu nedeniyle veya doktor tavsiyesiyle, %45'inin medya ve sigara karşıtı kampanyalarla sigarayı bıraktıkları görülmüştür.

Paketler üzerindeki sağlık uyarıları sigaranın riskleriyle ilgili tehditlerin ortaya konması ve bilgi vermesi bakımından önemli bir araçtır. Günde ortalama bir paket sigara içen bir kişi uyarıları yılda 7000 kez görme durumunda kalır. Sigara paketleri üzerinde yer alan uyarılar, korku uyarıcısı olarak görülmektedir. Korku uyarıcısı yaşamı olumsuz etkileyen tehditlere karşı bireyin alıcılarını uyandıran ikna edici mesaj ya da mesajlardır. Korku uyarıcılarına yönelik geliştirilen modellerde şiddet, zarar olasılığı, zararın şiddeti, tepki yeterliği, öz yeterlik vb. değişkenler göze çarpmaktadır.

Alan yazında yapılan birçok çalışma Koruyucu Motivasyon Teorisi (KMT) üzerine kurulmuştur. KMT korku uyarıcılarının etkisini inceler. Modellerde, değişkenlerin sigara içen bireylerin sigara içme davranışları üzerinde bir etkisi olup olmadığı ortaya konulmaya çalışılmış olsa da bizim dışımızda Türkiye'de KMT'yi temel alan başka bir çalışmaya rastlanmamıştır.

Araştırmanın Amacı: Bu araştırmada, sigara paketlerinde yer alan yazılı ve birleşik uyarıların zararın şiddeti, zarar olasılığı, tepki yeterliği, korku ve öz yeterlik değişkenlerinin sigara içip içmeme davranışı üzerindeki etkisi incelenmiştir. Buna göre alt problemler aşağıdaki şekilde belirlenmiştir.

1. Yol analizi sonuçlarına göre değişkenlerin yol katsayıları yazılı ve birleşik uyarı gruplarında nasıldır?
2. Zararın şiddeti, öz yeterlik, zarar olasılığı, korku, tepki yeterliği ve davranış ölçek puanları sigara içip içmemeyi ne düzeyde yordamaktadır?

Araştırmanın Yöntemi: Bu araştırma, betimsel araştırmalar kapsamındaki ilişkisel araştırma türündedir. Birinci alt problemin çözümünde yol analizi, ikinci alt problem için ise lojistik regresyon analizi kullanılmıştır. Araştırma üniversitesi öğrencileri arasından tesadüfi örnekleme tekniği ile seçilen 872 kişi üzerinden yürütülmüştür. Araştırmaya katılan öğrencilerin %77'sini kadın, %23'ünü erkek öğrenciler oluşturmaktadır. Veriler, Petersen ve Lieder (2006) geliştirilen bir ölçekle toplanmıştır. İki bölümden oluşan ölçeğin; birinci bölümde kişisel özellikler (cinsiyet, yaş, sınıf, sigara içme durumu), ikinci bölümde ise KMT'ye ait bağımsız ve bağımlı değişkenlerin belirlenmesine için 66 madde yer almaktadır. Araştırmaya katılan öğrenciler yaklaşık eşit olacak şekilde iki farklı gruba ayrılmışlardır. Kura çekme tekniğinden yararlanarak bu gruplardan biri yansız biçimde araştırmanın yazılı uyarı grubu (A; 469); ikincisi ise birleşik uyarı grubu (B; 379) olarak belirlenmiştir. Araştırmanın eğitim aşaması için Tütün ve Alkol Piyasası Düzenleme Kurulu (TAPDK) tarafından belirlenen 14 yazılı ve birleşik uyarıdan altı yazılı ve altı birleşik uyarı yansız biçimde seçilmiştir. Etiket ve uygulama izinleri alındıktan A

grubunda yazılı uyarı sunumu ve B uyarı grubunda ise birleşik uyarı sunusu ortalama olarak 25 dakika boyunca dersliklerde açıklanarak gösterilmiştir. Her iki grupta da sorulan sorulara cevap verilmiş ve öğrenci görüşleri ölçek yoluyla toplanmıştır. Uygulama ortalama olarak bir ders saati sürmüştür. Araştırma Eylül 2104-Nisan 2015 arasında uygulanmıştır.

Araştırmanın Bulguları: Araştırmanın birinci alt problemine göre yazılı ve birleşik uyarı gruplarındaki değişkenler arasındaki ilişkiler, beklendiği gibi korku değişkeni ile zararın şiddeti değişkenli arasında pozitif yönlü ve 0,01 hata düzeyinde anlamlı bir ilişki olduğu ($r = 0,563$); bu değişkenin diğer değişkenlerle ilişkisinin ise anlamlı ancak düşük düzeyde olduğu söylenebilir. Özyeterlik ve davranış değişkenleri arasındaki ilişki de beklentiye uygun şekilde pozitif yönlü ve 0,01 hata düzeyinde anlamlı olarak bulunmuştur ($r = 0,628$).

Araştırmanın ikinci alt problemin çözümünde öğrencilerin ölçek puanları (zararın şiddeti, özyeterlik, zarar olasılığı, korku, tepki yeterliği ve davranış) bağımsız; sigara içip içmeme ölçek puanları için hesaplanan regresyon katsayıları (B), Wald istatistikleri, serbestlik dereceleri, önemlilik düzeyleri (p) ve odds oranları görülmektedir. Wald istatistiklerinin önemlilik düzeyleri ile B katsayılarının yönü incelendiğinde ölçek puanlarından; zarar olasılığı değişkeninin pozitif yönde ve 0,01 hata düzeyinde; özyeterlik ve davranış değişkenlerinin ise negatif yönde ve 0,01 hata düzeyinde anlamlı oldukları görülürken; diğer değişkenlere ilişkin Wald değerlerinin anlamlı olmadığı görülmektedir.

Araştırmanın Sonuçları ve Önerileri: Yapılan araştırmalarda sigara paketlerinin üzerindeki korku uyarıcılarının önemli olduğu vurgulanmaktadır. Bu çalışmada yazılı ve birleşik uyarı grubunda zarar olasılığı ve zararın şiddeti ile korku arasındaki yol katsayılarının manidar olduğu görülmektedir. Buna göre zararın şiddeti ve zarar olasılığı arttıkça korkuda da anlamlı artışlar olabileceği söylenebilir. Diğer yandan yazılı ve birleşik uyarı gruplarının her ikisinde de korku, özyeterlik ve tepki yeterliği değişkenlerinin davranışın ortaya çıkmasında önemli etkileri olduğu söylenebilir. Diğer taraftan her iki grupta zararın şiddeti ve zarar olasılığının korku aracı değişkeni olmadan davranış üzerinde etkili olmamasının nedeni olarak, sigara içen ve sigara içmeyen öğrenciler için korkunun değişkenler arasında moderatör görevini görmesiyle ilişkilendirilebilir. Arthur ve Quester (2004)'e göre korkunun ortaya çıkması korku uyarıcıların yani zararın şiddeti ve zarar olasılığının etkisine bağlıdır ve bu değişkenler arasında aracı değişken olarak görev alır. Sigara paketlerinin üzerindeki korku uyarılarının önemli olmasına rağmen yapılan araştırmalarda gerek yazılı gerekse birleşik bu uyarıların bireyleri beklenen davranışa sevk etmediği görülmektedir. Bu çalışmada da benzer sonuçlar elde edilmiştir.

Yapılan bu çalışmada genel sonuç olarak sigara paketleri üzerindeki yazılı ve birleşik uyarıların (birleşik uyarılar daha etkili olmak üzere) bireyde sigara içmeyi önlemede etkili olabilecekleri söylenebilir.

Anahtar Kelimeler: Sigara, sigara paketi, sağlık uyarısı, davranış, korku, sağlık eğitimi