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Threatening messages, risk perception and the intention of smoking cessation. The case of student smokers at Athens Panteion University

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Abstract

A plethora of campaigns focuses on communicative practices, such as the use of public warnings in the form of advertisements, with the aim of informing smokers about the potential risks of starting and maintaining smoking. Conducted researches have shown the effectiveness of such campaigns on smoking cessation. The present survey examines the influence of threatening messages given to 150 smokers, who are students of Athens Panteion University, aged between 18 and 28, by estimating subjective risk perception, the intention to quit smoking within 30 days and within 6 months, and the disengagement beliefs. The participants were separated in two groups, the control group and the experimental group, in which they received a threatening message, and subsequently completed the questionnaire. The results indicated that smokers in the experimental group had higher subjective risk perception. In specific, those who were in the later stages of changing behaviour appeared to have a higher intention to quit smoking. The smokers' high adherence to disengagement beliefs reduced the risk perception, but there is a correlation between disengagement beliefs and groups related to this variable. The results suggest that threatening messages are an effective strategy for preventing and motivating people to quit smoking.

Keywords: Sociology of health, risk perception, medical information, health campaigns.

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Introduction

Health campaigns usually attempt to boost conscious-raising and motivation in order to change unhealthy behaviour patterns by issuing them with health warnings. This communicative attempt mostly pertains to exposing to fear and threatening messages, thus increasing smokers' subjective perception that something bad will happen (risk perception) and motivating them in adopting healthy behaviours, preventing themselves from future health risks (Lipksus, 2007: 696-713).

It is also argued that the subjective experience of being at risk is conducive to altering smokers' health identities, especially in conditions that their vulnerability to health diseases has been statistically measured before (Gillespie, 2012: 194-207). It is noticeable that our analytical focus on behaviour and experience energetically synthesizes sociological and psychological concerns on a highly interdisciplinary research basis.

In health sociology literature, the increase of smokers' risk perception and vulnerability can be arguably achieved by taking advantage of different types of threatening messages. Specifically, there is considerable evidence that graphic advertisements about the negative impact of smoking are effective and suitable in low and middle income countries, whilst media campaigns affect more economically advantaged populations (see for example Durkin et al., 2013; Niederdeppe et al., 2008).

Last but not least, another course of action taken by various health campaigns is the increasing depiction of tobacco industry's action as seriously deceitful and exploitative (see Thrasher et al., 2006). This significantly conduces to preventing adolescents' smoking and raising highly their levels of concern, even on health risks regarded as being of less importance (Mart, 2012: 87-97).

Actively cutting across disciplinary boundaries, the current sociological study uses (a) the Transtheoretical Model to carefully examine the effects of the stages of change and of the reception of threatening messages on risk perception and the intention of the smoking cessation, (b) the Health Action Process Approach Model (HAPA) to investigate the factors that intervene and increase the motives and intention, leading to action, and (c) the disengagement beliefs for the examination the (low or high) adherence to them, after the received warning message.

Risk and Addiction in the Sociology of Health

Over the recent years, many sociological attempts have been made in order to define and describe the term "risk", which, within contemporary culture, is

a ubiquitous issue being stretched over a wide range of social activities and practices, such as national security, terrorism, food, smoking, drugs, safety, and so on. It seems that risk is an emergent phenomenon constantly related to the rhythms of people's everyday lives (see Mythen, 2013).

In a sociological light, therefore, risk is tightly intertwined with social and cultural norms, worldviews and habits. People's responses to risk are mainly believed to stem from their membership in social and cultural groups, instead of being perceived as the mere direct result of personality traits or character. In this regard, putting aside the personality-based understandings or interpretations of risk, recent research analytically focuses on explicitly acknowledging the various social, historical and geographical influences, which lead social groups to respond to risk in a particular way. Of course, such approaches assume that cultural background and individuals' lifestyles constitute the major factor in conceptualizing and dealing with risks (Mythen and Walklate, 2006).

Within the vast literature of the sociology of risk and health, a long series of surveys have been conducted studying the importance of social and cultural system in risk perception. Sociologists have shown great interest in the interrelation between peoples' socio-demographic background or particular activities and their views of their health, when they are told that they are at risk. Cases in point, who are deemed to be at higher risk of health problems and early mortality, are pregnant women over the age of 35, or people who smoke or drink alcohol excessively. Such individuals are mostly characterized by the need for constant reassurance that they are out of risk and seek ways to protect themselves from a health disease (Mythen and Walklate, 2006).

With respect to these unhealthy behaviors mentioned above, it is of paramount importance to mention the instrumental factor of "addiction", which usually impedes people from breaking these sorts of habits. For instance, nicotine addiction is sustained due to the high amounts of nicotine attained in the smokers' brain. In this way, the body starts building up tolerance to the drug, which leads smokers to have a strong craving for more nicotine so as to get the same effect. Because of the body's tolerance, smokers mostly have withdrawal symptoms on abstinence from the nicotine, such as frustration, anger, irritation, insomnia, or increased appetite (see Hatsukami et al., 2008).

From a psychosociological perspective, the nicotine addiction is also sustained by behavioral and social learning factors. Besides smokers' personality characteristics, which greatly determine their level of addiction or their will to quit, environmental stimuli also play a significant role. Smokers often associate the environmental stimuli or their daily habits with tobacco and its positive effects. According to relevant research, when they are exposed

to such stimuli or situations, their desire for smoking increases highly and they often relapse into tobacco use (see Hatsukami et al., 2008). The rate of relapse remains high, due to the addictive nature of smoking, but it is worth mentioning that abstinence from tobacco can be achievable. There is a great variety of programmes and treatments for tobacco control, which are much too effective in reducing the frequency of tobacco use (Hatsukami et al., 2008).

Last but not least, smoking is associated with five million deaths per year worldwide and is considered as one of the leading causes of premature death (Hatsukami et al., 2008). For this reason, health campaigns and promoters often use threatening messages to a large extent, in order to control and change any sort of unhealthy lifestyle patterns, such as smoking, alcohol and food consumption, diet and sexual behavior (Lupton, 2012: 229-244). According to sociological surveys on smoking cessation, it has been indicated that fear conveyed by threatening health information not only increases smokers' responsiveness to them, but also appeals on persuasion and adaptation of healthy behaviors (Maddux, 1983: 469-479; see van Koningsbruggen et al., 2009). Almost the same results have been formulated in sociological researches on fast food in comparison to food prepared within home. These researches clearly showed that the participants considered fast food as dangerous to their health and greatly related it to overweight (Lupton, 2012: 229-244).

The Transtheoretical Model

The Transtheoretical Model asserts that when people attempt to change an unhealthy behaviour, they pass through different stages. Three of the five stages were included in this research: a) the precontemplation stage, where the smoker does not intend to change her behaviour in the near future and does not realize the imminent health problems and so resisting, b) the contemplation stage, where the smoker thinks seriously of quitting in the near future, contemplating the negative consequences, and c) the preparation stage, where the smoker considers quitting smoking within the next month, trying to find ways to reduce it. The stages of action and maintenance have not been included, because that would mean that the participants had already proceeded to smoking cessation and therefore there would be no point in taking part in the survey.

According to the Transtheoretical Model, the stage of change, in which the smoker finds herself, largely affects the adoption or the rejection of a specific behaviour. When receiving threatening information, smokers who are in the first stages of change (precontemplation and contemplation) develop defenses

and have weak intentions towards change. On the contrary, smokers in the preparation stage show higher threat perception and plan to change their unhealthy behaviour (see Cho et al., 2006).

The Health Action Process Approach Model

The HAPA refers to the predictive factors that increase motivation and lead to action. It is a form of stage model, where within two phases different social-cognitive factors can change even unhealthy behaviour. In the initial motivation phase, the smoker develops the intent to act, as she is thinking of her abilities and the effects of the adoption or rejection of a smoking behaviour. The outcome expectancies (e.g. "If I quit smoking, I can prevent a heart attack") and the action self-efficacy, which refers to the smokers' ability to perform a desired behaviour ("I can resist smoking even if I have a strong desire"), potentially, lead to creating intention. In the volitional phase, if the smoker has developed the intent to change, she goes into action, which is maintained through self-regulation skills and strategies.

Usually, action self-efficacy and the outcome expectancy are thought as predictive factors of intention compared to subjective risk perception (Luszczynska, 2004: 95-103). This means that smokers' faith in managing to change their behaviour and the positive effects of this change are the two main factors influencing intention to the experienced threat (when reading a warning message).

Disengagement beliefs

When having an unhealthy behaviour and realizing its negative effects, people are usually in a state of confusion. The same happens in the case of a smoker adopting disengagement beliefs (e.g. "I know heavy smokers who live long"), thus ignoring the negative association between smoking and the age of death. Disengagement beliefs are convictions that help one to reduce threat perception, while provoking peace of mind and continuation of an unhealthy behaviour (Dijkstra, 2009: 791-804). Higher adherence to disengagement beliefs implies reduced incentives to quit; in contrast, when the adherence is low, the adoption of a healthy behaviour seems more likely.

More specifically, it has been found that smokers with high levels of adherence to disengagement beliefs showed reduced intention, whereas smokers with low levels had a greater motivation to quit (see Kleinjan et al., 2006, 2009). It is remarkable that smokers with high adherence, after receiving threatening information, were more motivated to stop smoking (Dijkstra, 2009: 791-804).

Types of threatening messages

The threatening messages delivered through health campaigns aim at informing smokers about the negative effects of smoking. In order to trigger feelings of threat to its readers, a persuasive message should include risk factors, negative consequences, advantages and disadvantages of preventative behaviours. These messages may focus on the benefits of adopting a particular behaviour or the losses due to non-adoption. It has been observed that messages referring to potential benefits not only affect people's preferences for treatment, but they are also better understood.

There are different types of threatening messages, which are used to promote healthy behaviour patterns; however, it is not clear yet which is most effective. The traditional preventive messages are in text format and are those which are most commonly used. They influence the risk perception, the smokers' behaviour and increase the intention for the smoking cessation within the following 6 months (see Rothman et al., 1999; see Hall et al., 2003).

Another form of the projection of threatening message information is through the use of images. It is supported that visual information is more efficient than that of text format, because it potentially increases the smoker's motivation to quit (see Fong et al., 2009). The use of images has a greater effect on smokers, because it increases the perception of imminent danger, at least for a short time (see O'Hegarty et al., 2006). Moreover, the exposure of people to fear can also be done with the use of numeral information, such as percentages, rates, frequencies. Although such information is more accurate, it does not seem to increase the threat perception or the intention of a behavioural change. In specific, threatening messages with rates presentation had no effect compared with those with text format (see Williams et al., 2001). We conclude that despite the surveys on different message formats, it is not easy to say what kind of threatening messages are more influential on readers, concerning the starting of healthy behaviour patterns.

Survey hypotheses

The aim of the current study is to examine certain hypotheses. More specifically, we assume that smokers in the experimental group, due to receiving the threatening message, will show greater subjective risk perception and intention to quit smoking within 30 days and within 6 months, compared with the control group. Furthermore, we assume that smokers in the later stages of behaviour change ("contemplation-preparation") will have increased threat perception and intention too, in comparison with smokers in the precontemplation stage. Finally, we hypothesize that smokers with high

adherence to disengagement beliefs will have lower risk perception and intention than smokers with low adherence.

Methods

Recruitment and procedure

The sample group consisted of students from various departments of Panteion University, Athens, Greece. There was randomized sampling and students' participation was voluntary on condition that they are at least occasional smokers. The questionnaire administration was cross-sectional and the data collection lasted from the end of April to the end of May 2012.

The total number of participants was 150, randomly assigned to one of the two conditions, 75 in the control condition, who completed only the questionnaire, and 75 in the experimental condition, who first read the threatening message.

The threatening message

The threatening message consisted of information about the negative effects of smoking, as well as rehabilitation, which is initiated by the organism in the first few hours after quitting. The aim was to increase the perception of both negative and positive effects, when smoking is discontinued. Initially, there was a reference to cigarette components and statistical data about the higher incidence of various diseases in smokers. Accompanied by an image of the human body, the following were noted: a) smoking short-term effects (cough, increased heart rate, and decrease in lung function) and b) smoking long-term effects (stroke, blindness, cancer).

At the end of the message, the smoking cessation was suggested to the smoker through a list of positive results, such as the elimination of carbon monoxide from the body, the nicotine detoxification, the improvement of lung function.

Measurement

The variables used in the questionnaire (either it included the threatening message or not) were the same and concerned information about smoking.
Demographic variables

The demographic variables measured were gender, age, and age at which they started smoking. There were also variables concerning if a participant's family member is a smoker and who exactly that was, and about the comorbidity between smoking and illness in a relative.

Disengagement beliefs

The disengagement beliefs contain 12 questions (Dijkstra, 2009: 791-804). They refer to the reduction of a smoker's cognitive dissonance and justify why someone continues to smoke, regardless of the known harmful smoking effects. Their measurement was taken on a 7-point scale, starting from "Strongly disagree" (1) to "Strongly agree" (7). The participant completed and scored the sentence "Smoking can make me ill, but…" with phrases, such as "…medical science will discover something", "…I live a healthy life otherwise", (α= 0.76).

Subjective risk perception

- *Threat severity*

To measure threat severity 4 questions were used. They had the form of "How serious threat is to your health…" and then followed diseases, such as "…high blood pressure", "…a cardiovascular disease", "…cancer", "…respiratory problems" (see Fair et al., 2008; see Soureti et al., 2010; see Schwarzer et al., 2012; Weinstein, 1987: 481-500). The participant had to score the items on a 7-point scale, from (1) "Not severe at all" to (7) "Very severe", (α= 0.85).

- *Subjective risk perception in relation to the person*

This variable refers to how likely it is that the participant be struck down by certain diseases. There were four questions and the diseases reported were identical to the previous question's content. They had the form of "The chances of having some time in my life…" The questions were scored on a 7-point scale, from "Far below average" (1) to "Far above average" (7), (α= 0.81).

- *Subjective risk perception in relation to others*

The measurement of risk perception in relation to others was made through four questions formulated in the following way: "Compared with persons of the same sex and age, the chances of having…" (see Fair et al., 2008; see Soureti et al., 2010; see Schwarzer et al., 2012; Weinstein, 1987: 481-500). These were completed by the presence of four diseases, which were the same as the previous two question categories, and scored on a 7-point scale, from "Very below average" (1) to "Very above average" (7), (α= 0.89).

- *Intention to quit smoking*

The sample's intention for smoking cessation was measured by two questions: "I intend to quit smoking in the next 30 days" and "I intend to quit smoking in the next 6 months". The questions were adapted and then a 7-point scale

was used from "Do not agree at all" (1) to "Very much agree" (7) (see Schwarzer et al., 2012).

Because the questions focused on a different time horizon, the means were measured separately. The participants' intention to stop smoking within 6 months was close to average, but it was greater compared to their intention to quit within 30 days.

Self-efficacy

Self-efficacy refers to smokers' ability to overcome their desire and resist the cigarette (see Renner et al., 2012). Eight questions were adapted and used in the form "I can resist smoking even if…" and completed with phrases, such as "…I hang out with friends who smoke", "…I am nervous". Participants scored on a 5-point scale from "Not true at all" (1) to "Absolutely true" (5), (α= 0.81).

Outcome expectancy

It refers to the evaluation of positive and negative expectations of the sample on smoking cessation. Eight questions were used, after being adapted, with the form "If I quit smoking…" and scored on a 5-point scale from "Not true at all" (1) to "Absolutely true" (5) (see Renner et al., 2012). The items, which completed the sentences, were separated into two categories: Four mentioned to the negative outcome expectancy of quitting, for instance "…I'll be nervous", "I'll gain weight", and four referred to the positive outcome, such as "…will alleviate expenses", "…the others will appreciate my will power", (α= 0.57).

The eight questions under evaluation indicated that they had moderate reliability. On this account, Factor Analysis was used, in order to be grouped into possible smaller categories. The table of Factor Analysis separated the questions into three factors.

Stage of smoking cessation

This refers to the stage of behavioural change of participants, who were categorized based on the following two questions:
- The first referred to the intention of quitting smoking within the next 30 days or within the next 6 months.
- The second referred to even the one successful quit attempt at quitting of the individual for at least 24 hours during the previous year.

Fagerstrom Test for Nicotine Dependence

To measure the dependence degree, six questions were given from the Fagerstrom Test for Nicotine Dependence (Fagerstrom, 1978: 235-241), where the participants had to choose only one answer:

1. How soon after you wake up do you smoke your first cigarette?
2. Do you find it difficult to refrain from smoking in places where it is forbidden?
3. Which cigarette would you most hate to give up?
4. How many cigarettes do you smoke each day?
5. Do you smoke more during the first few hours after waking up rather than during the rest of the day?
6. Do you still smoke even when you are so sick that you are in bed most of the day?

Statistical analysis

In order to examine the effect of two groups, the stage of behaviour change, the degree of disengagement beliefs on subjective risk perception and the intention to quit smoking, multiple ANOVAs were selected.

In order to investigate the interaction between (a) group and stage and (b) group and disengagement beliefs in relation to subjective risk perception and the intention to quit smoking within the next 30 days and within the next 6 months, two way ANOVAs were used.

Finally, in order to measure the proportion of variability in intention to quit smoking in 30 days and in 6 months, we used the method of Linear Regression. According to the Health Action Process Approach Model, the independent variables here are risk perception, outcome expectancy and self-efficacy.

Results

Sample characteristics

The sample consisted of 150 student smokers, of whom 68% were women and 32% were men. Their age ranged between 18-28 years, with mean age of 21.48 years (SD= 2.20), and their age at which they started smoking was between 12-22 years, with mean age 16.97 years (SD= 2.04). A percentage 63.3% of the participants were slightly addicted, 29.3% moderately addicted, and 7.3% highly addicted (Table I).

With regard to these results and due to the fact that the number of people who were moderately and highly addicted were less than 25, the category of "moderately addicted" and "highly addicted" incorporated and formed a common category ("moderately-highly addicted"). Regarding the stage of behaviour change, 62.7% belonged to the precontemplation stage, 30.7% to the contemplation stage, and 6.7% to the preparation stage (Table II).

Due to the fact that the smokers who belonged to the last two stages (contemplation and preparation) were few, in order to analyze them further as

a separate category, we formed a new stage, which included the previous ones ("contemplation-preparation stage"). In order to examine the differences between the participants on the basis of their total score on disengagement beliefs, we used the Media test, which divided them into two categories: (a) smokers with low score adherence (Median≤ 3.96) and (b) smokers with high score (Median> 3.96).

Effect of group and stage of behaviour change in variables

The group to which participants belonged had a statistically significant effect on the subjective perception of threat severity. In specific, the experimental group, because of receiving the threatening message, they showed higher threat perception than the control group, $(F_{(1,146)}= 6.25, p= 0.01)$ (M experimental group= 5.55, T.A.= 1.20; M control group= 5.06, SD= 1.45). Also, the stage was statistically significant $(F_{(1,146)}= 3.77, p= 0.05)$, while the mean of the "contemplation-preparation" stage was slightly higher than (the mean of the) precontemplation one (M contemplation-preparation= 5.57, SD= 1.22; M precontemplation= 5.15, SD= 1.40).

Moreover, the group had statistically significant results to the variable of subjective risk perception in relation to the person and to others, $(F_{(1,146)}= 5.96, p= 0.02)$ (M experimental group= 4.50, SD= 1.17; M control group= 4.09, SD= 0.92) and $(F_{(1,146)}= 5.82, p= 0.02)$ (M experimental group= 4.03, SD= 1.27; M control group= 3.59, SD= 1.10) respectively.

Regarding the stage of quitting smoking, it showed statistically significant results in the smoking cessation, not only in the following 30 days but also in the following 6 months, $(F_{(1,146)}= 47.88, p= 0.000)$ $(F_{(1,146)}= 93.54, p= 0.000)$, respectively. More specifically, the mean of the "contemplation-preparation" stage was higher than the mean of the precontemplation stage in relation to quitting smoking in 30 days (M contemplation-preparation= 3.95, SD= 1.93; M precontemplation= 2.05, SD= 1.41) and in 6 months (M contemplation-preparation= 5.14, SD= 1.49; M precontemplation= 2.62, SD= 1.57). This supports the fact that smokers in later stages had a higher intention of quitting.

Effect of group and disengagement beliefs in variables

The group's effect on threat severity and subjective risk perception in relation to the individual and to others remained the same, as it was mentioned above. Concerning the disengagement beliefs, the results were statistically significant for threat severity $(F_{(1,146)}= 3.93, p= 0.05)$. In specific, the participants with higher adherence to disengagement beliefs showed a lower mean to this variable, in comparison with those with a lower adherence (M high adherence= 5.09, SD= 1.31; M low adherence= 5.52, SD= 1.37).

Disengagement beliefs also effected the risk perception in relation to the person ($F(1,146)= 4.17$, $p= 0.04$) (M high adherence= 4.12, SD= 1.06; M low adherence= 4.47, SD= 1.06), and there was interaction between them and group ($F(1,146)= 3.79$, $p= 0.05$) (Figure 1).

The same interaction appeared in the variable of the risk perception in relation to others ($F(1,146)= 4.06$, $p= 0.05$) (Figure 2). Based on the results, the participants in the experimental and the control group differed slightly regarding subjective risk perception in relation to the person and to others, when the levels of disengagement beliefs were high. In contrast, at lower levels of adherence, participants in the experimental group showed a higher score compared with the control group. Very interesting was the result that participants in the control group with either high or low adherence to disengagement beliefs showed almost the same score in the threat perception. However, group and disengagement beliefs had no effect on the intention to quit smoking within 30 days and within 6 months.

Predictive factors of intention to quit smoking within 30 days and within 6 months
The method of Linear Regression (Linear Regression, Method = Enter) was used to investigate the proportion of variability in intention to quit smoking within 30 days and within 6 months. Self-efficacy was the only variable, which significantly influenced the smokers' intention to stop smoking within 30 days ($p= 0.004$) and within 6 months ($p= 0.002$). The remaining variables, such as the risk perception and the outcome expectancy, had no statistical effect on the intention of quitting.

Discussion and Conclusions

The aim of this sociological/interdisciplinary study was to examine the effect of threatening messages to student smokers at Athens Panteion University. The results confirmed some of the survey hypotheses on the influence of these messages. More specifically, the hypothesis that the group to which participants belonged affects subjective risk perception was confirmed. The use of threatening messages by both text and images on the positive and negative effects of smoking increased the risk perception on being struck down by a disease in the experimental group, in comparison to the control group. Similar results have been found in previous studies, not only by text format but also by images (see Hall et al., 2003; O'Hegarty et al., 2006 see Garrud et al., 2001; see Humphris et al., 2004; see Fathelrahman et al., 2010). In a study on women smokers with mean age 43 years, who received leaflets with threatening messages about the negatives consequences

of smoking, it was found that they had an increased intention to quit within 6 months and they felt more vulnerable compared to those women who did not receive any relevant information (see Hall et al., 2003)

However, the hypothesis that the group can have a positive effect on the intention to quit smoking within 30 days and within 6 months was not confirmed. The content and the frame of the message play an important role in this – for example, whether or not the message focuses on the benefits of adopting a particular behaviour or the loss due to non-adoption, and how extensive and detailed it is. In Rothman and Salovey's survey, participants who read information about the benefits of using sunscreen had a greater intention of using it, compared to those who read information about the loss of non-adoption (see Rothman et al., 1997).

Indeed, on the basis of other studies, it has been shown that the provision of such detailed leaflets and messages, focusing on the benefits and the losses of a particular behaviour, increase people's knowledge and intention of stopping an unhealthy behaviour pattern, compared to people who did not read such information (see Hall et al., 2003; see Garrud et al., 2001). It is proposed to future researchers to use threatening messages, both extensive and not, based on the benefits and the losses of a behaviour, in order to examine their effect on readers.

Also, it was found that the stage in which the smoker was situated affects the intention to quit smoking within 30 days and within 6 months. Specifically, the smokers in the precontemplation stage showed a lower intention to quit within 30 days and within 6 months, in comparison to the smokers in the later stage ("contemplation-preparation"). Corresponding results were found in previous surveys on smoking and skin cancer (see Cho et al., 2006; see Hall et al., 2003).

Regarding the disengagement beliefs, they had significant effect on the overall subjective risk perception and its some sub-scales. More specifically, the smokers with high adherence to the disengagement beliefs showed reduced threat perception, compared to the smokers with lower adherence. Similar results were found in other studies on smoking (Dijkstra, 2009: 791-804; see Kleinjan et al., 2009). Indeed, in this survey, the mean of disengagement beliefs was even greater, compared to the mean of adults and adolescents in previous studies (see Kleinjan et al., 2006, 2009). This is reasonable if we take into consideration that smoking is nowadays socially acceptable in Greece and that the younger someone is, the less vulnerable to risks she feels – thus disengagement beliefs are likely to be more.

Moreover, the interaction found between disengagement beliefs and the group in relation to subjective risk perception is notable. When the levels of adherence were lower, the smokers in the experimental group showed a higher

risk perception in comparison to those in the control group. It is proposed for future research to focus on the ways in which the threatening messages can act effectively in people with high levels of disengagement beliefs.

With reference to the hypothesis that the disengagement beliefs affect the intention to stop smoking in 30 days and 6 months, this was not confirmed by the results. The results of a survey on smoking (Dijkstra, 2009: 791-804) are inconsistent with those of this study, as the smokers in the experimental group, who had high levels of disengagement beliefs, showed a greater intention of quitting. Based on this survey, it is obvious that the use of a threatening message to people with adherence to disengagement beliefs can be considered effective for the smoking cessation. It is necessary to conduct more research on disengagement beliefs and on how they interact with threatening messages on subjective risk perception and participants' intention of changing their behaviour.

Furthermore, regarding the predictive factors of intention to quit smoking within 30 days and within 6 months, it was found that only 11% was explained by the risk perception, outcome expectancy and self-efficacy, whereas the only predictive factor of intention of quitting not only in 30 days but also in 6 months was the self-efficacy. Similar results have been found in others studies on diet (4%) and smoking (13%), where only self-efficacy was the predictive factor of intention (see Scholz et al., 546-561).

There were some limitations in this survey. One of them was that, in the same leaflet, text information and images were both used, making it difficult to distinguish between which of the two types of information had a greater effect on smokers. It is proposed for future studies, where informative leaflets are provided, to examine the influence of threatening messages by using more conditions, such as information with visual framing and text framing, as well as both visual and text framing, in order to specify the exact conditions in which these messages are more effective. In previous studies (see O'Hegarty et al., 2006; see Fathelrahman et al., 2010), it was found that the use of threatening messages with both images and text in cigarette packets was more effective with regard to the intention of stopping and the risk perception, compared with the use of only text or image.

The larger number of women (68%) compared to men (32%) constitutes the limitation of the present study, which may have influenced the results. Studies have previously showed that women are more willing to make behavioural changes in their health. In a study on eating habits, the difference in subjective risk perception and action self-efficacy, as a predictive factor of intention between women (28%) and men (9%), was remarkable (see Renner et al., 2008). Therefore, it is proposed for future studies to carefully focus on recruiting equal numbers of men and women, in order to better understand

the differences between them on risk perception and intention to change behaviour.

A limitation of the survey is that the examination of the effects of the group, the stage, the disengagement beliefs and their interactions was within a particular period of time rather than over time (e.g. after 30 days, 6 months, 1 year). It is recommended for future research to measure both smokers' intention of change and the cessation or reduction of cigarettes at various intervals.

Based on the results of the conducted survey, we can hereby conclude that the provision of threatening messages may possibly increase the risk perception pertaining to the occurrence of a disease. Regarding the stage of behaviour change, it had significant effect on the intention of quitting smoking within 30 days and within 6 months. Also, the effect of the threatening message was higher for the smokers with low adherence to disengagement beliefs, whilst it increased the risk perception, in comparison to the smokers with high adherence, because, in this case, they developed various defenses. It is recommended that future research and health campaign designers not only use threatening warnings with image and text, but also attempt the potential exploration of disengagement beliefs with other variables, such as self-efficacy.

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Tables

Table I. Frequency and rate of smoking addiction according to the group

		Slightly Addicted N (%)	Moderately Addicted N (%)	Highly Addicted N (%)
Group	Control	46 (61.3%)	22 (29.3%)	7 (9.3%)
	Experimental	49 (65.3%)	22 (29.3%)	4 (5.3%)
Total		95 (63.3%)	44 (29.3%)	11 (7.3%)

Table II. Frequency and rate of the stage of behaviour change according to the group

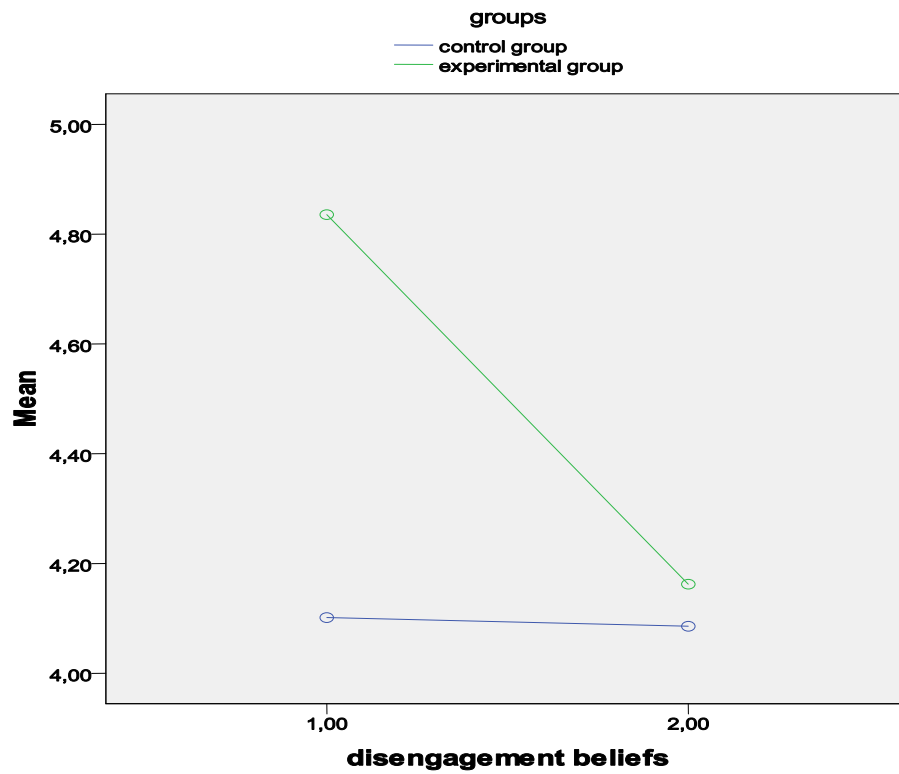|		Precontemplation N (%)	Contemplation N (%)	Preparation N (%)
Group	Control	46 (61.3%)	23 (30.7%)	6 (8%)
	Experimental	48 (64%)	23 (30.7%)	4 (5.3%)
Total		94 (62.7%)	46 (30.7%)	10 (6.7%)

Figures

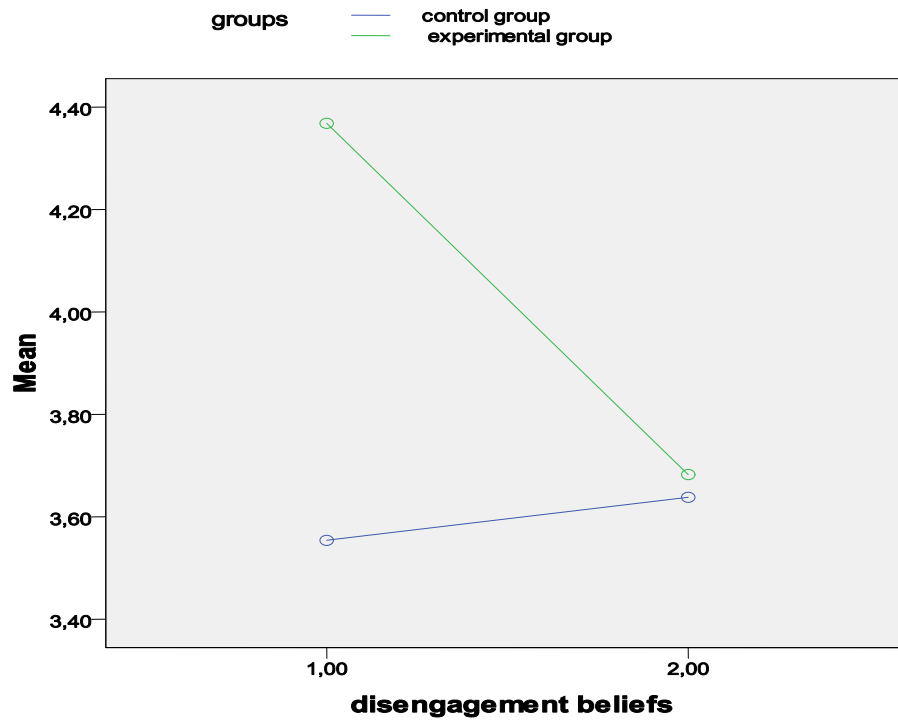Figure 1. Mean for the subjective risk perception in relation to the person.

Figure 2. Mean for the subjective risk perception in relation to the others.