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Attitude toward smoking: the effect of negative smoking-related pictures

Abstract

Research background: Endeavouring to develop healthy societies is a primary goal in many countries. As smoking is a major problem of public health, lowering the extent of smoking is one of the conditions for developing a healthy society. Based on the research revealing that the pairing of the product with negative stimuli enhances the possibility of negative reaction to the product as negative stimulus transfers it's meaning to the product, tobacco packaging was labelled with negative smoking-related pictures illustrating the danger of smoking. Nevertheless, the extent of smoking is still large in many countries. Hence, the effect of negative smoking-related pictures has been the subject of intense debate within the scientific community.

Purpose of the article: The aim of this research is to determine the effect of negative smoking-related pictures on the both implicit and explicit attitude toward smoking.

Methods: For the purpose of determining the effect of negative smoking-related pictures on the both implicit and explicit attitude toward smoking, Implicit Association Test and ques-

tionnaire survey were provided. The questionnaire was elaborated based on the analysis and synthesis of scientific literature.

Findings & Value added: The theoretical analysis substantiated the influence of attitude toward the product on consumer purchase decisions. Nevertheless, people do not always want to reveal their opinion, hence traditional marketing research methods for measuring explicit attitude are not sufficient as they are often not objective. Therefore, neuromarketing research methods complement traditional marketing research methods by providing more objectivity. Consequently, the Implicit Association Test and traditional questionnaire research are applied for the empirical research, revealing the effect of negative smoking-related pictures on the both implicit and explicit attitude toward smoking. The recommendations for the usage of negative smoking-related pictures on purpose to influence attitude toward smoking and consumer purchase behaviour are substantiated.

Introduction

Health is the indicator of the quality of life, affecting human and social well-being. As a result of rapid development of the industry and fast-paced society, human health problems have become especially relevant. The lack of physical activity, improper eating habits and living standards can cause irreversible negative health changes. Government and socially responsible organizations are the ones who can encourage and involve people in the society to contribute to the improvement of the quality of our lives (Pilelienė, 2010, pp. 296–303). Therefore, educating the society about the healthy lifestyle becomes the focus area of public authorities. As smoking is one of the major public health problems, lowering its extent is one of the conditions for developing a healthy society.

The World Health Organization's Framework Convention on Tobacco Control's (FCTC) guiding principle is that "every person should be informed of the health consequences, addictive nature, and mortal threat posed by tobacco consumption and exposure to tobacco smoke" (Thrasher *et al.*, 2007, pp. 233–240). Schneider, Gadingern and Fischer (2012, pp. 77–83) notice that the most discussed recommendation of FCTC is the Article 11.1.b.V, which recommends the use of pictures to emphasize warnings on cigarette packaging. As the number of smokers in the EU is 28 per cent of the population and around 50 per cent of smokers die prematurely (on average 14 years earlier), the Tobacco Products Directive (2014/40/EU; became applicable in the EU Member States on 20 May 2016) requires that health warnings appear on packages of tobacco and related products; combined (picture and text) health warnings must cover 65 per cent of the front and back of cigarette and roll-your-own tobacco packages (European Commission, 2014). According to Schneider, Gadinger, and Fischer (2012), such warnings on cigarette packaging are cheap,

appeal to a broad audience of smokers and non-smokers, and they restrict and counterbalance the advertising and brand label space of tobacco companies.

Fear appeals have been widely used in social marketing with the aim of reducing harmful behaviour (Manyiwa & Brennan, 2012, pp. 1419–1437). Analysing fear appeals in the framework of cigarette packaging, pictorial warnings were found to produce a stronger motivation to quit, and more intense levels of fear (Schneide *et al.*, 2012). The research provided by Romer and Jamieson (2001, pp. 65–80) showed that risk perception plays a much stronger role in decisions to stop smoking than in decisions to start. On the other hand, the study provided by Nonnemaker *et al*. (2016, pp. 15–22) indicated that eliminating the tobacco display might reduce attempts to purchase tobacco — the display ban reduced the urges to smoke. Moreover, Manyiwa and Brennan (2012) argue that despite the fact that fear appeals are frequently used in anti-smoking advertising, the evidence on their effectiveness is mixed, and in some studies strong fear appeals have even been found to reinforce the undesirable behaviour. Therefore, aiming to contribute to the scientific discussion on a bipolar effectiveness of fear appeal-based pictorial warnings on cigarette packaging, the scientific problem of the research is framed by a question: what is the effect of smoking-related pictures illustrating the danger of smoking on consumer attitude? The purpose of this research is to determine the effect of negative smoking-related pictures on both implicit and explicit attitude toward smoking.

Research methodology

Marketing theory proposes (Spears & Singh, 2004, pp. 53–66) that feelings are affective responses to the marketing communication messages that influence attitude toward the advertisements. Attitude toward the advertisements influences attitude toward the brand / product, which in turn influences purchase intentions of that brand / product. If the affective response is positive, it positively influences the attitude towards the advertisement, but if the affective response is negative, it negatively influences the attitude toward the advertisement (Aydınoğlu & Cian, 2014, pp. 506–519).

Previous scientific researches (Morgenstern *et al*., 2011, pp. 146–151) reveal that exposure to alcohol advertisements is significantly associated with behavioural outcomes; moreover significant associations are found between attitudes and smoking behaviour (Dietz *et al*., 2013, pp. 115–121). Hence, this substantiates the sequence of effects to be: *advertisement-feelings-attitude-behaviour*; and the assumption could be made that such

a sequence is relevant for smoking advertisements and their outcomes for consumers as well: pairing of the tobacco products with negative stimuli can enhance the possibility of negative reaction to the product. Thus, tobacco packaging is labelled with negative smoking-related pictures illustrating the danger of smoking in many countries.

Nevertheless, research (Khan *et al*., 2015, pp. 218–226) reveal that visual cues of specific objects in the advertisements can influence attitude toward those advertisements. Furthermore, smoking cues in the environments increase smoking urge and promote smoking behaviour (Stevenson *et al*., 2017, pp. 49–52). Consequently, labelling tobacco packaging with negative smoking-related pictures illustrating the danger of smoking can have different outcomes: 1) enhance the possibility of negative reaction to the tobacco products; or 2) promote smoking behaviour due to the presented smoking cues.

To determine the effect of negative smoking-related pictures on the attitude toward smoking, not only explicit attitude, but also implicit attitude or cognition, measured indirectly by having participants perform certain tasks, should be assessed (Pokhrel *et al*., 2016, pp. 134–140). Hence, the research is composed of two parts: Implicit-Association Test (IAT) and questionnaire research.

Implicit-Association Test is a widely-used cognitive-behavioural paradigm that measures the strength of automatic (implicit) associations between concepts in people's minds relying on latency measures in a simple sorting task. The strength of the association between concepts is measured by the standardized mean difference score of the 'hypothesis-inconsistent' (target A with attribute B and target B with attribute A) pairings and 'hypothesis-consistent' (target A with attribute A and target B with attribute B) pairings (D Score). In general, the higher the D Score the stronger the association between the 'hypothesis-consistent' pairings. Negative D Scores suggest a stronger association between the 'hypothesis-inconsistent' pairings (Greenwald *et al*., 2003, pp. 197–216). The usefulness of the IAT in measuring association strength depends on the assumption that when the two concepts that share a response are strongly associated, the sorting task is considerably easier than when the two response-sharing concepts are either weakly associated or bipolar-opposed (see Greenwald *et al*., 2002, pp. 3–25).

In this research Inquisit's Picture IAT by Millisecond Software was applied. Target stimulus A were positive smoking-related pictures, target stimulus B — negative smoking-related pictures, attribute A — positive words related to positive feelings (happy, welcomed, appreciable, supported, honourable), attribute B — negative words related to negative feelings

(hurt, cheated, accused, attacked, disadvantaged). Inquisit calculates D Scores using the improved scoring algorithm as described in Greenwald *et al.* (2003, pp. 197–216). Error trials are handled by requiring respondents to correct their responses according to recommendation. The sequence of the steps of the procedure is as follows:

− Target Category sorting training;
− Attribute sorting training;
− Test Block of hypothesis-consistent pairings with 20 trials (half of the participant start with inconsistent pairings);
− Test Block of hypothesis-consistent pairings with 40 trials;
− Target Category sorting training with targets switching sides;
− Test Block of hypothesis-inconsistent pairings with 20 trials;
− Test Block of hypothesis-inconsistent pairings with 40 trials.

During the test, participants sat in front of a computer screen, where the instruction about the IAT procedure was presented to them. They were told that positive and negative words as well as pictures of positive and negative smoking-related pictures would be presented on the screen. Their task was to classify these words and pictures by pressing one of two keyboard keys (the response keys were 'E' and 'I'). Participants were informed that each stimulus would remain on the screen until a correct classification had been performed.

The experiment was held in February, 2017. All of the participants of the IAT experiment were tobacco smokers. 12 participants' (3 females) data appropriate for the analysis were obtained. All of the participants were Lithuanians at the age group of 18–36 years. IBM SPSS Statistics v.20 software package was applied for the statistical analysis of the results obtained from the Inquisit software.

After the IAT experiment, different respondents (who did not participate in the IAT experiment) were divided in two groups of 17 respondents per each. In each of the groups, out of 17 respondents 7 were tobacco smokers. To the first group of respondents, only positive smoking-related pictures were shown. To the second group of respondents, under the same conditions, only negative smoking-related pictures were shown. After showing the pictures, respondents were instructed to fill out questionnaire. The questionnaire consisted of three main parts:

− Explicit attitude toward smoking;
− Intentions (for quitting smoking / not starting smoking);
− Demographic data of respondents.

The attitude was assessed using a semantic differential scale (9 indicators), thus revealing the strength and direction of a persons' attitude toward smoking. 7-point Likert scale was used to measure the intentions regarding

quitting smoking (if respondent was a tobacco smoker) / not starting smoking (if respondent was not a tobacco smoker).

The experiment was provided in February, 2017. The total sample size was 34 (13 female; 14 tobacco smokers; 18–36 years old). All of the respondents were Lithuanians. IBM SPSS Statistics V.20 and XLSTAT 2014 software products were used for the statistical analysis of the questionnaire research results.

Research results

The results of Implicit-Association Test (IAT) are presented in Table 1 below. Positive D Scores suggest a stronger association between the 'hypothesis-consistent' pairings, which in this case is positive smoking-related pictures with positive words related to positive feelings and negative smoking-related pictures with negative words related to negative feelings. Negative D Scores suggest a stronger association between the 'hypothesis-inconsistent' pairings, which in this case would be positive smoking-related pictures with negative words related to negative feelings and negative smoking-related pictures with positive words related to positive feelings. As it can be seen, none of the results contain negative D Score. Hence, all of the participants have stronger association between positive smoking-related pictures and positive words related to positive feelings; moreover, stronger association between negative smoking-related pictures and negative words related to negative feelings. Therefore, it could be stated that implicit attitude toward negative smoking-related pictures is substantiated to be negative.

The results of the explicit attitude toward smoking measured by the questionnaire are provided in Figure 1. Explicit attitude toward smoking was measured on semantic differential scale with 9 indicators and the measure of Cronbach's Alpha (equals to 0.897) substantiates the internal consistency of the measurement scale. Based on the measurement scale, the higher the evaluations of the attitude toward smoking, the more positive the attitude towards smoking.

When analyzing the group of smokers, it can be seen that the ones who saw positive smoking-related pictures had more positive attitude towards smoking when compared with those who saw negative smoking-related pictures. The same situation is with the group of non-smoking respondents: those respondents who saw positive smoking-related pictures had a more positive attitude towards smoking when compared with those who saw the group of negative smoking-related pictures. Consequently, it could be stat-

ed that positive smoking-related pictures were associated with more positive attitude towards smoking and negative smoking-related pictures were associated with more negative attitude towards smoking. Hence, the latter results substantiated the results obtained by IAT. The theoretical assumption that pairing of the products with negative stimuli enhances the possibility of negative reaction to the product grounds the results of IAT and explicit attitude towards smoking: implicit negative attitude towards negative smoking-related pictures can result in more negative attitude towards smoking.

The results of the analysis of the intention to quit (for smokers) / not to start (for non-smokers) smoking substantiate previously obtained results as well (see Figure 2). Based on the measurement scale, the higher the evaluations of the intention to quit / not to start smoking, the higher the intention to quit / not to start smoking.

When analyzing the group of smokers, it can be seen that the ones who saw negative smoking-related pictures have higher intention to quit smoking when compared with the ones who saw positive smoking-related pictures. When analyzing the group of non-smokers, again it can be seen that the ones who saw negative smoking-related pictures have higher intention not to start smoking when compared with the ones who saw positive smoking-related pictures. Hence, it could be stated that negative smoking-related pictures are associated with higher intention to quit smoking or not to start smoking.

Consequently, the assumption can be made that implicit negative attitude toward negative smoking-related pictures can result in more negative attitude towards smoking, which in turn can result in the higher intentions to quit or not to start smoking.

As the correlation coefficient is statistically significant between the dependent and independent variables, simple linear regression analysis is conducted and the results are provided in the Table 2 below. As it can be seen, the attitude towards smoking has a negative statistically significant ($p < 0.01$) influence on the intention to quit / not to start smoking. Thus, the more positive is the attitude toward smoking, the lower is the intention to quit / not to start smoking and vice versa.

The visualized regression line of intention to quit / not to start smoking by attitude toward smoking is presented in the Figure 3. The R^2 value is moderate (above 44 percent); thus, the explained variance of the analyzed variable is considered as sufficient in this case as only one predictor of intention to quit / not to start smoking is studied. The visualized regression line reflects the trend of decreasing intention to quit / not to start smoking with the growing positive attitude towards smoking. Therefore, the more

negative is the attitude towards smoking, the higher is the intention to quit / not to start smoking.

Based on the analysis of the research results, it could be stated that negative smoking-related pictures lead to the negative implicit attitude towards those pictures. Pairing of the product with a negative stimuli causing negative implicit attitude towards that stimuli transfers its meaning to the product, thus leading to the more negative attitude towards the product, in this case — smoking. Negative attitude towards smoking in turn influences the increasing intention to quit / not to start smoking. Consequently, negative smoking-related pictures have the effect on both, attitude towards smoking and behavioural outcomes regarding smoking.

Conclusions

Smoking is one of the major public health problems and lowering its extent is one of the conditions for the development of healthy society. Hence, in many countries tobacco packaging is labelled with negative smoking-related pictures illustrating the danger of smoking. Nevertheless, research regarding the effectiveness of such fear appeal-based pictorial warnings on cigarette packaging are bipolar.

Based on marketing theory, pairing of the tobacco products with negative stimuli can enhance the possibility of negative reaction towards the product. On the other hand, the possibility exists that labelling tobacco packaging with negative smoking-related pictures illustrating the danger of smoking can promote smoking behaviour due to the presented smoking cues.

The analysis of the research results reveals that negative smoking-related pictures cause negative implicit attitude toward those pictures. Negative implicit attitude towards those pictures leads to the more negative attitude towards smoking. Negative attitude towards smoking in turn influences the increasing intention to quit / not to start smoking. Consequently, negative smoking-related pictures have the effect on the attitude towards smoking and on the behavioural outcomes regarding smoking.

Based on the analysis of the research results it could be stated that the recommendation to use negative smoking-related pictures illustrating the danger of smoking on tobacco labelling is appropriate mean to lower the extent of smoking. Moreover, the use of such negative smoking-related pictures is an adequate mean for social marketing campaigns.

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Annex

Table 1. Results of Implicit-Association Test

No	D Score	Preference	Average D Score
1	0.81	Positive	
2	1.04	Positive	
3	1.24	Positive	
4	1.14	Positive	
5	0.75	Positive	
6	0.53	Positive	0.955
7	0.81	Positive	
8	0.90	Positive	
9	1.15	Positive	
10	1.31	Positive	
11	1.22	Positive	
13	0.56	Positive	

Table 2. Standardized regression coefficient of variable Intention

Source	Value	S.E.	t	p value	Lower bound (95%)	Upper bound (95%)
Attitude	-0.666	0.132	-5.048	0.0001	-0.934	-0.397

Figure 1. Explicit attitude toward smoking, Cronbach's Alpha = 0.897 (higher evaluations equal to more positive attitude toward smoking)
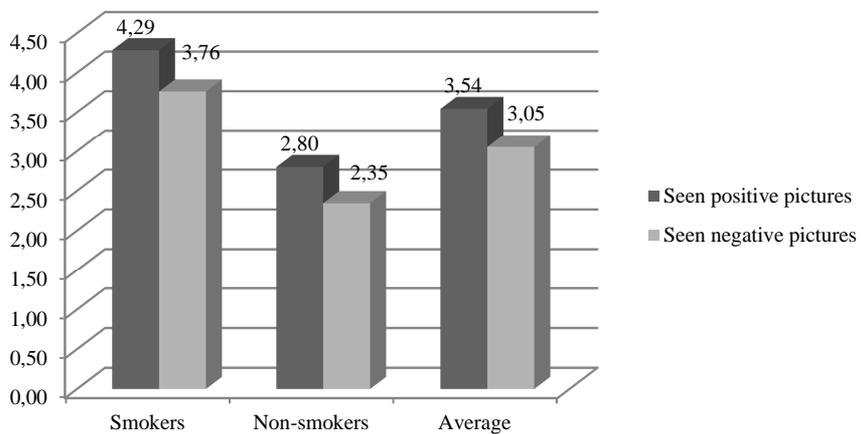
Figure 2. Intention to quit / not to start smoking (higher evaluations equal to higher intention to quit / not to start smoking)
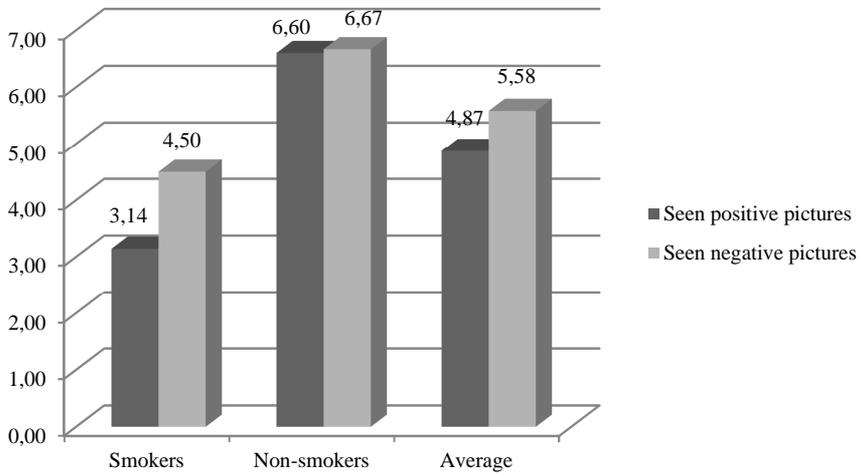

Figure 3. Regression of Intention by Attitude ($R^2 = 0.443$)