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## The use of visual warnings in social marketing: The case of tobacco

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## ABSTRACT

Despite strong interest on the part of tobacco health practitioners, the effect of graphic warnings inserted on cigarette packs is unclear on several levels. First, the most effective themes for such messages have not been clearly identified by researchers. Second, no research has identified the ideal combination of self-efficacy and fear appeal warnings that should be inserted on cigarette packs, according to Protection Motivation Model principles. The exploratory study we conducted with French consumers to test the effectiveness of new graphic warnings proposed by the European Union in 2004 clearly demonstrates that visual messages, as opposed to text warnings, are more effective. This study also enabled us to identify the most effective themes of the European set: health warnings and social messages. Regarding future public health applications, if fear appeals are used, they need to be combined with self-efficacy and cessation support messages since they provoke avoidance reactions.

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## 1. Introduction

Cigarette smoking is a major cause of premature death: tobacco use kills 5.4 million people a year and accounts for 1 in 10 adult deaths worldwide ([www.who.int](http://www.who.int)), while within the European Union it accounts for over half a million deaths each year. Since 2003, the World Health Organization has proposed the Framework Convention on Tobacco Control (FCTC) in order to decrease the number of smokers worldwide. The FCTC aims to help and guide countries in developing effective tools for tobacco control policies. In order to improve the effectiveness of tobacco prevention campaigns, the FCTC encourages use of graphic warnings on tobacco packs. More than 20 countries have introduced them: Canada, 2000, Brazil, 2002, Thailand, 2005, Belgium, 2006, UK, 2008, etc. Studies have been conducted to assess the impact of these visual warnings. Researchers have underlined the main objectives and basic principles for the elaboration of such messages, but their effects remain unclear on several levels. For example, the possible adverse effects of fear appeals or the most effective themes for such messages have not been clearly identified.

The aim of the present study is to deal with these questions by determining the impact of new graphic warnings proposed by the European Commission since 2004 on French consumers and provide new insights in the field of social marketing.

## 2. Literature review

Research on product warnings started in the eighties and most studies focus on the impact of textual and rational warnings (Cox et al., 1997, Argo and Main, 2004). The first scientific publication on pictorial tobacco warnings appeared in 2003 (Hammond, Fong, McDonald, Cameron and Brown) and was followed by other studies, mainly by public health researchers. These studies underline that graphic warnings are more effective than textual labels on cognitive and emotional reactions as well as behavioral intentions. Regarding cognitive reactions, graphic warnings are more visible (O'Hegarty et al., 2007; Hoek et al., 2005), easier to understand and increase awareness and knowledge of the health hazards of smoking (Hammond et al., 2006; Trasher et al., 2007). In the same way, graphic warnings proposed in Canada since 2000 are read by a great majority of smokers (Hammond et al. 2003) or make young people think about trying to quit smoking (Koval et al., 2005).

As for emotional reactions, graphic labels activate responses that have an impact on behavior. Indeed, Hammond et al. (2004a), Crespo et al. (2007), Gallopel-Morvan et al. (2006) or Goodall and Appiah (2008) highlight that loss-framed graphic warnings generating emotions of fear, disgust, or anxiety have a positive impact on quitting, attempting to quit or reducing smoking. Finally, concerning behavioral intentions, graphic labels are more effective than texts in motivating smokers to quit (Kees et al., 2006), to help former smokers remain smoke-free (Hammond et al., 2004b; O'Hegarty et al., 2006) and to prevent non-smokers from starting (Sabbane et al., 2009a,b; Koval et al., 2005).

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Despite these promising results in international research, the influence of graphic labels remains unclear on several points.

First, Hastings et al. (2004); Rutter and Kok (2001) and Stewart and Martin (1994) consider that insufficient attention has been paid to unintentional consequences of warnings and especially the possible adverse effects of fear appeal messages. Very few studies have dealt with this issue and their conclusions diverge: Peters et al. (2007) or Goodall and Appiah (2008) find no defensive reactions to graphic loss-framed and fear appeals on tobacco labels whereas Hammond et al. (2004a) find that 1% of smokers reported smoking more when seeing threatening visual warnings: 36% reported making some efforts to avoid the labels and 13% felt that the warnings were not credible. These defensive reactions are probably part of the fear control process highlighted by many researchers in social marketing and psychology (Witte and Allen, 2000). To prevent this problem, the Protection Motivation Model suggests combining the fear appeal with another message oriented toward the efficacy of the recommended response (i.e. “stopping smoking reduces the risk of fatal heart and lung diseases”) and self-efficacy (i.e. “the target’s ability to perform the response”) (Tanner et al., 1991; Floyd et al., 2000). Applied to tobacco warnings, this means that if a fear appeal is inserted on one side of a cigarette pack, a message oriented toward self-efficacy or the efficacy of quitting must be inserted on the other side. No research to date has identified the ideal combination of positive and negative labels that should be inserted on cigarette packs.

Secondly, while many studies on graphic tobacco warnings have concluded that visual labels in general are more effective than text messages on persuasiveness variables, current literature is not conclusive in terms of which graphic warnings are the most suitable and effective: health warnings, social messages, physical safety messages, etc. However, themes in antismoking media messages differ significantly in effectiveness (Devlin et al., 2007; Smith and Stutts, 2003). For instance, Pechmann et al. (2003) identify that norm-based appeals were the most effective on teenagers. Regarding tobacco warnings, very few studies have dealt with this issue. Hoek et al. (2005), Trasher et al. (2006) and Crespo et al. (2007) underline that health and physical well-being messages (lung tumor, cancer of the larynx, yellow teeth, open heart surgery) and/or social messages (healthy children in reference to the dangers of second-hand smoke, a dead fetus in a specimen jar) seem to be the most effective warnings.

Thirdly, studies on effectiveness of visual warnings in countries other than Canada or the USA are very limited (Crespo et al., 2007; Gallopel-Morvan et al., 2006). Yet some authors find cultural differences with respect to the meaning of visual symbols in advertising (Mikhailitchenko et al., 2009), anti-tobacco media campaigns (Laroche et al., 2001) and tobacco graphic warnings (Sabbane et al., 2009a,b). Considering the cultural differences between France, Canada and USA underlined by Hofstede (1983), reactions of French people toward graphic warnings may not be the same as in these countries.

Given all these limitations, the present research aims to explore the way French people consider graphic or textual messages on cigarettes packs, especially loss-framed messages, self-efficacy warnings or a combination of these. The intentional and unintentional consequences of threat appeal messages will also be explored as well as the reactions toward the different themes proposed by the European Union in the new graphic warnings.

### 3. Methodology

In France, like most European countries, current warnings are only texts and cover 30% of the front of cigarette packs and 40% of the back. The front pack warnings are “smoking kills” or “smoking seriously harms you and others around you” and the back of the pack must contain one of 14 other text warnings. Since October 2004, the European Union has developed 42 new visual warnings that may be

voluntarily used by member states in addition to the two existing text warnings for the front of the pack. These illustrations concern different problems (health, sexual, social or physical and cessation support messages). Belgium was the first European country to adopt these labels in December 2006 and the UK and Romania introduced them in 2008.

In order to achieve our research goals, new European graphic warnings were tested on French people. This study was funded by the French National Cancer Institute. A qualitative method was chosen to better identify effects and consequences of these new graphic labels. This method was also chosen because it provides in-depth data. It is suitable for exploring attitudes, perceptions and reactions and is useful for evaluating complex phenomena such as how audiences process and make sense of messages in a social marketing context (Miles and Huberman, 2002). Six focus group discussions were conducted in Rennes, Paris and Brest (France) with a total of 50 people (26 smokers, 24 non-smokers, 25 women, 25 men). Each group was composed of 7 to 9 individuals. Non-smokers were included in the sample since, according to social cognitive theory, they can influence smokers, and warnings can help them refrain from or not start smoking. People from age 15 to 46 were interviewed because they are a target group for French health practitioners. Indeed, they are heavy smokers compared to the general population (40% vs. 30%). Group discussions lasted about 2 h. The materials for the focus groups were divided into 3 sets (see Table 1): 3 real Marlboro packs (the leading brand in France) with different warnings (current French texts and/or new European messages), 12 new European visual warnings that address different smoking problems and 2 new European warnings on cessation support. These 14 graphic labels were selected among the 42 messages proposed by the EU as they proved the most effective warnings according to a French survey implemented by the French National Institute for Health Prevention and Education in 2006 with a representative national sample.

Based on these materials, the discussion was divided into several stages. Participants were first asked to give their opinion on the 3 Marlboro packs. Then, respondents were asked to express their feelings on the 12 new European negative visual warnings and the 2 cessation support messages. All discussions were video and audio-recorded. *Verbatim accounts* were transcribed and analyzed using thematic content analysis. The main themes and sub-themes defined provide insight into perceptions of these warnings.

### 4. Results

When comparing the 3 packs of Marlboro (materials in Set 1), participants said that pictorial warnings reached them more and were more effective than texts, which were overexposed (20 occurrences). Moreover, the pack of Marlboro with visual warnings was judged less attractive than the ones with verbal messages (17, more for people age 15 to 24). The warning with a picture of external cancer tumors inserted on 2 Marlboro packs provoked numerous reactions: negative (184, more for smokers, women and people 15 to 34 years old: lack of credibility of the picture, too shocking) and positive ones (105: it attracts attention, it ruins the attractiveness of cigarette pack, it is effective in preventing young people from smoking). This warning also provoked strong emotional responses (69 occurrences, more women and smokers: rough, harsh, frightening and shocking). The visual message “your doctor or your pharmacist can help you stop smoking” inserted on the back of one Marlboro pack generated fewer reactions. Some people perceived it as humane, educational and reassuring (24) whereas others considered it totally flat, invisible (10) and an ineffective way to help people quit smoking (9).

Regarding the 12 new visual and loss-framed messages (materials in Set 2), people were first asked to individually write down their feelings (see Table 2 for results).

Table 1

Materials: tested packs and graphic warnings.

**Set 1 : 3 Real Marlboro packs with different warnings**

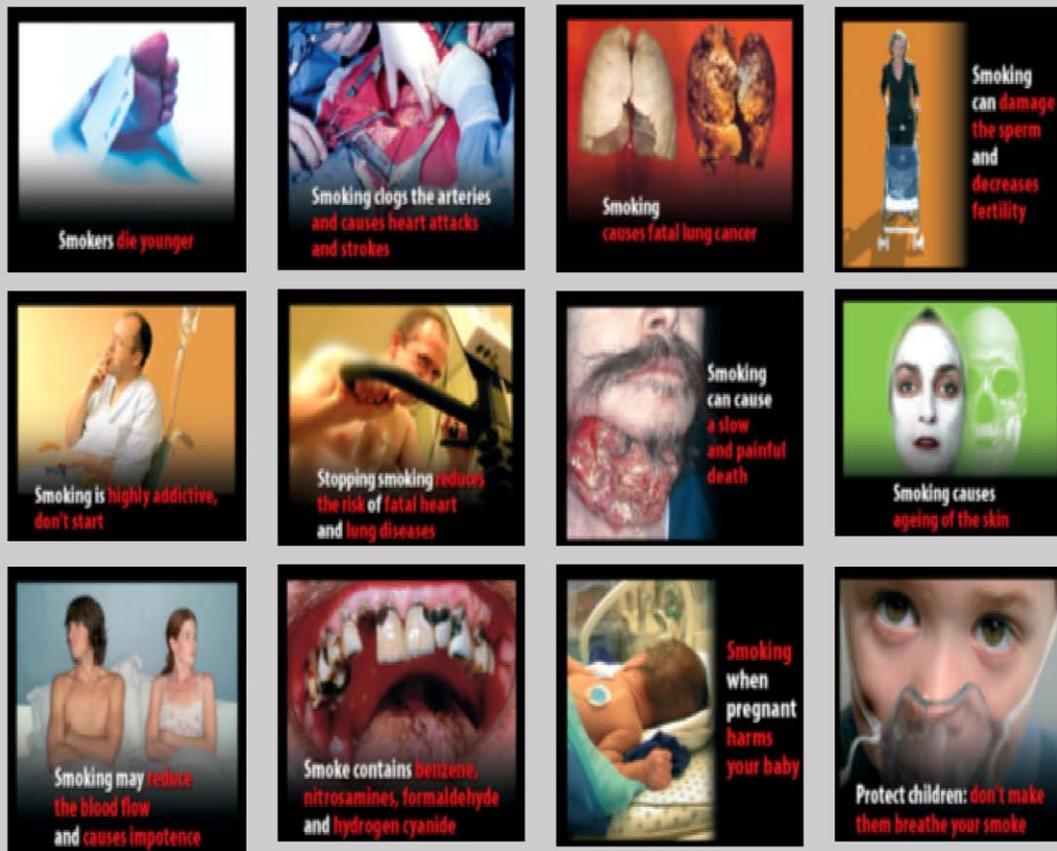


Back: “Smoke contains benzene, nitrosamines, formaldehydes and hydrogen cyanide”

Back: “Smoking can cause a slow and painful death”

Back: “Your doctor or your pharmacist can help you stop smoking”

**Set 2: 12 European visual warnings that address different smoking problems**



**Set 3: 2 European visual warnings on cessation support**



**Table 2**  
The most effective warnings and themes (materials in Set 2).

Teeth and mouth	External tumor on the neck	Clean and dirty lungs	A man and a woman in a bed	A child with a mask
•The most striking (20 respondents)	•The most striking (13)	•The easiest to understand (22)	•The most effective in preventing young people from smoking (13)	•The one that solicited the most concern (17)
•The most effective in preventing young people from smoking (18)	•The easiest to understand (11)	•The most credible (14)		
•The most effective in motivating smokers to quit (11)	•The most effective in motivating smokers to quit (13)	•The most effective in motivating smokers to quit (14)		
•The most effective in preventing non-smokers from smoking (13)	•The most effective in preventing non-smokers from smoking (15)	•The most effective in preventing non-smokers from smoking (14)		

During the ensuing discussion of these 12 warnings, some of them generated significantly more negative reactions than positive ones. The face of a woman and a skeleton (skin problems) provoked 9 positive reactions and 30 negative ones (more women, more smokers and more 15 to 24-year-olds). The main criticisms stemmed from a lack of understanding and the image, which was judged too beautiful. In the same way, the man and the woman in bed (sexual problems) generated 5 positive reactions and 27 negative ones (more among people from age 35 to 45): people did not feel concerned and the picture was not clear without the text. Conversely, warnings that resulted in more positive reactions than negative ones referred to social concerns. The child with a mask (46 positive reactions and 2 negative ones) and a baby in an incubator (20 positive reactions and 9 negative ones) were perceived as relevant, credible and important. Warnings that provoked the strongest fear appeal reactions were the picture of teeth and mouth (18) and external tumors on the neck (16). Like reactions to the tumor discussed above, attitudes toward the picture of mouth and teeth were also extremely mixed. While this warning was seen as addressing a tangible problem and effective on young people (24 occurrences), it was also perceived as not credible and highly exaggerated (31).

Reactions to the 2 cessation support warnings (materials in Set 3) were more even. The message “get help to stop smoking: 0 825 309 310” (the French help line) with the two hands received a total of 70 positive reactions (more non-smokers) and 63 negatives ones (less for people age 25 to 34). Most people liked the number of the quit line (it is helpful, easy, practical and anonymous) and the visual of the joined hands that evoked support and help. Main criticisms also concerned the quit line, which was perceived as impersonal, and the visual, which was judged unclear. The warning “your doctor and your pharmacist can help you stop smoking” totaled 9 positive reactions and 40 negative ones (more women, more smokers and more age 35 to 45). It was perceived as more humane than a quit line, but the link between a doctor checking someone’s blood pressure and tobacco use was not clear for many people. Moreover, some people considered that a doctor cannot help smokers quit smoking.

## 5. Discussion and conclusion

While previous research has identified the basic principles for enhancing the effectiveness of tobacco graphic warnings, the present study explores this topic further. Indeed, this work provides new academic contributions by adding external validity to the existing literature, by testing the use of fear appeals and self-efficacy messages in a product warning context, and finally by proposing some precise and efficient themes for prevention messages.

First, this study reveals that French people no longer react to current text warnings because these messages are old and tired (they have been implemented in European countries since 2003). To deal with problems of overexposure, as in advertising (Scott and Solomon, 1998), and to improve effectiveness, tobacco warnings must be changed and a system of rotating messages must be developed to prevent weariness.

Secondly, this research highlights the added-value of illustrations and text above text-only messages in a social marketing and warning context. These results are in line with marketing studies. Indeed, research has demonstrated the positive impact of pictures introduced in advertising (Miniard et al., 1991; Unnava and Burnkrant, 1991; Childers and Houston, 1984). The elaboration likelihood model provides one explanation for the superiority of pictorial and textual over text-only messages (Petty et al., 1983). This model shows that people can be persuaded by the merits of the arguments in a message (central route of persuasion) or by factors around the central message and that generate emotion (picture, music, popular spokesperson...) (peripheral route of persuasion). Regarding pictorial warnings, both routes are activated (the peripheral route with the pictures and the central route with the text), thus, messages are perceived as more effective.

Thirdly, while tobacco visual warnings in general appeared more effective than texts alone, strong differences were noted between the 14 messages tested. It is interesting to note that fear appeals, both health and socially oriented, were often cited as the most effective. Results on socially-oriented warnings are in line with TRA (theory of reasoned action, Ajzen and Madden, 1986; Finlay et al., 1997). This model predicts that people are more likely to adopt a behavior if they think a relevant group values the behavior (social norms). There is evidence that it is socially valued to protect children from second-hand smoke and to be a good lover. The findings are also consistent with fear appeal theory. Indeed, in their meta-analysis, Witte and Allen (2000) conclude there is a positive relationship between fear and effectiveness of a message.

However, it is important to note that the fear appeals also provoked many defensive reactions. In order to prevent this problem, combination of a self-efficacy warning with a fear appeal was tested on a real pack of Marlboro. In spite of this association, numerous defensive reactions were observed. This result may be explained by the fact that French society has a strong score of uncertainty avoidance (86) compared to Canada (48) or the USA (46) (Hofstede, 1983). This means that French society is more rigid, inflexible and probably less open to changes and thus, more resistant towards new graphic tobacco warnings. The Extended Parallel Process Model can also explain this phenomenon of defensive reactions (Witte, 1998). The author proposed that when perceived efficacy and/or self-efficacy are inferior to a perceived threat, people feel unable to escape the threat and employ techniques that resolve dissonance crises and reduce the emotion of fear (defensive avoidance). The self-efficacy message with a doctor was probably unable to increase the smokers’ self-efficacy. The same problems occurred with the message get help to stop smoking. As a result, it is recommended to re-write these two self-efficacy messages. Moreover, precise instructions on quitting smoking should be inserted in the pack of cigarettes to reassure smokers, as is the case in Canada (e.g. information on cessation programs, a quit line number or a website) and media campaigns with testimonials or advices on quitting may be necessary. The main negative reactions toward visual warnings were generated by the lack of credibility of some messages, the lack of links between pictures and texts or unclear visuals. As these problems may reduce the

persuasiveness of warnings, some European labels need to be adapted and re-written before use. Regarding credibility, the mention of highly credible sources on visual warnings, like the World Health Organization or the European Union, may enhance the persuasive impact of messages (Gotlied and Sarel, 1991).

While this research highlights results that can help develop more effective tobacco warnings, it remains limited due to its exploratory nature. Indeed, the effects of warnings were not measured on real behavior nor on a representative sample. Moreover, further research on warnings is also needed in other cultures and other fields of social marketing (e.g. alcohol prevention and food products in the context of obesity). Finally, studies on TMT (terror management theory) and risky behavior could also be integrated. These theories could help interpret contradictory results that offset the effect of fear appeal warnings (Shehryar and Hunt, 2005).

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