VISUAL ATTENTION TO HEALTH WARNINGS IN TOBACCO ADVERTISEMENTS: AN EYE-TRACKING RESEARCH BETWEEN SMOKERS AND NON-SMOKERS*

Antonio CRESPO[1], Raúl CABESTRERO, Gabriela GRZIB, Pilar QUIRÓS

[1] Faculty of Psychology, National Distance University of Spain (UNED-Madrid)
C/ Juan del Rosal 10, 28040-Madrid, Spain
E-mail: acrespo@psi.uned.es

Abstract: Using a physiological eye-tracking approach, previous research has suggested that novel health warnings inserted in tobacco ads capture visual attention better than mandated ones. Nonetheless, no up-to-date studies have analyzed the eye movement behavior between smokers and non-smokers to examine the presence of attentional biases towards the warnings. The main objective of this research was to evaluate the effectiveness of new text-only warning labels in capturing and holding visual attention, taking into account the presence or absence of smoking habit (smokers vs. non-smokers). Three versions of an ad were used: version 1 was the original ad including the mandated warning message, and versions 2 and 3 were modifications of the original message. A sample of 132 Spanish participants (50% smokers and 50% non-smokers) freely explored one version of the ad while eye movements were recorded. Eye tracking was used as an index of the attentional deployment towards the health message. Immediately after ads presentation, participants also completed a masked memory task. Results indicated a better recall of the original version of the warning than newer ones. Moreover, contrary to previous research, eye movement data showed that new warnings inserted in tobacco ads were neither more quickly attended than mandated message nor cognitively processed to a greater extent. Finally, our results did not reveal the presence of attentional biases for warning labels embedded in the ad, suggesting that the time spent looking at the warning message, as well as the ability to remember it, appear to be identical for smokers and non-smokers. Overall, our research offers some significant implications for the development of tobacco advertising policies.

Key words: visual attention, eye tracking, eye movements, warning labels, tobacco advertising

The presentation of health warnings in tobacco advertisements is a common strategy to alert consumers to the adverse effects of smoking. Its effectiveness has been a topic broadly discussed in previous works (Kaiserman, 1993; Krugman, Fox, Fischer 1999; Strahan et al., 2002), and several methodological techniques have been developed to check if health warnings are detected. Interviews, questionnaires, and self-reports are usual strategies to assess whether the warning has been viewed, the perceived believability of the warning, or the degree of impact (Borland, 1997; Beltramini, 1988; Duffy, 1999; Fischer, Krugman, Fletcher, Fox, Rojas, 1993). These strategies exhibit the inherent problem of subjectivity, and sometimes a voluntary distortion of information may be present in the results. Memory measurements are another frequently applied method (Truitt et al., 2002). It is assumed that visual attention devoted to a warning inserted in an ad will improve its recall or

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Correspondence concerning this article should be sent to Antonio Crespo.

recognition in later tests. Nevertheless, as some research has shown (Radach, Lemmer, Vorstius, Heller, Radach, 2003; Rosbergen, Pieters, Wedel, 1997), this last assertion is being questioned in the realm of general advertising because of the lack of control over the stimuli exposure times and their visual complexity, factors that can affect the depth of processing. Finally, psychophysiological techniques such as eye movement recordings prove to be much more objective in assessing the efficacy of a warning label to attract observers' visual attention. Eye-tracking methods, broadly used in the field of attention and visual perception, have provided several findings relating oculomotor behavior with the control of attention and cognitive processing (Henderson, Hollingworth, 1999; Hoffman, 1998; Hyöna, Radach, Deubel, 2003; Rayner, 1998). During the viewing of an advertisement, an alternate sequence of saccades and ocular fixations characterizes the observer's visual scan, the saccades being the fastest eye movements that enable viewers to redirect the line of gaze to zones of interest, and fixations the periods of time when the point of regard remains relatively still.

In the field of attentional control and cognitive processing, previous works have discussed the cognitive correlates of the oculomotor measures usually recorded in eye-tracking investigations (Inhoff, Radach, 1998). Whereas some of these measures are linked to initial stages of attentional capture, some others are closely related to the later cognitive processing. In particular, the time before first fixation (latency of initial fixation) over a visual area is useful to analyze the initial orienting component of attentional bias, with short latencies suggesting that an area attracts the observer's attention soon and quickly. Additionally, the number of fixations over a visual zone is of great importance to analyze the late re-engagement of attention, along with the dwell time (total amount of time scanning the zone), these parameters being indicators of the depth of processing within the specific zone. In conclusion, eye-tracking systems are a step forward to know *where* and *how long* people look at different areas of an advertisement (and, by extension, a warning label inserted on it), and today are arising as a leading technology to report objectively what persons are looking at.

Although research on eye movements may help us to objectively test whether warning labels in tobacco ads are attended and perceived, an eye-tracking approach has remained unusual in the field of tobacco advertising control (Fischer, Richards, Berman, Krugman, 1989; Fox, Krugman, Fletcher, Fischer, 1998; Krugman, Fox, Fletcher, Fischer, Rojas, 1994), probably due to the high cost of eye trackers and the necessary technical expertise. Previous research proved that only 37% of participants looked at the warning inserted in the ad long enough to read its words (Fischer et al., 1989). A later study carried out by Krugman et al. (1994) analyzed the effect of novel warning messages versus a mandated one in a sample of American adolescents. Line of gaze over the warning was recorded using eye movement measurements. Overall results indicated that new messages were more effective in attracting visual attention than the mandated message. Nevertheless, a masked memory test exhibited better recall of the classic warning as compared to the newer ones, probably due to the effect of previous familiarity. Finally, a positive relationship between eye movement measurements and the recall level was found: mean number of fixations on the warning and mean dwell time (defined as the total time of fixation

on the warning) were greater in high recallers than in low recallers. This last result supported the idea that eye-tracking data were valid measures to predict later recall, as well as the validity of eye-tracking measures to test the attentional effectiveness of warnings inserted in ads.

Due to the scarcity of eye-tracking studies, the results described above should be cautiously interpreted, more empirical evidence being necessary. Additionally, no up-to-date comparative work has been carried out to analyze whether the initial attentional capture of a health message is similar between smokers and non-smokers, as well as the subsequent processing time devoted to it. In this sense, in comparison with non-smokers, recent research on tobacco addiction has shown that smokers exhibited attentional biases in a variety of experimental paradigms. For example, deprived smokers named slower the colors of smoking-related words than the colors of control words in modified Stroop-type tasks (Waters, Feyerabend, 2000). Similarly, smokers responded more quickly to probes replacing smoking-related scenes (e.g., a woman holding a cigarette) than to control scenes (e.g., a woman applying lipstick) in visual probe tasks (Mogg, Bradley, Field, de Houwer, 2003). Also, using eye movement measurements, some works have pointed out that smokers maintained their gaze on smoking-related pictures for longer compared to neutral pictures, and this effect seemed to be enhanced by nicotine deprivation (Field, Mogg, Bradley, 2004; Mogg et al., 2003). Hence, given that a warning should stimulate thoughts about effects of smoking, it could be supposed that the presence of this health message inserted in an ad might act as a meaningful cue responsible for different scanning behaviors between smokers and non-smokers. From an attentional perspective, a lack of knowledge in this respect justifies the necessity of carrying out an explorative analysis. This analysis between smokers and non-smokers would help to better understand how both populations visually attend to health messages inserted within cigarette advertisements.

To address the above issues, the present research examined the effectiveness of new text-only warning labels in capturing and holding visual attention, taking into account the presence or absence of smoking habit (smokers vs. non-smokers). Specifically, three research questions were explored: a) Do novel warnings exhibit a better recall than existing ones? b) Do novel warnings attract and maintain visual attention of observers to a greater extent than the mandated ones? c) Are there any differences in recall and eye movement behavior over the warning between smokers and non-smokers? To answer these questions, a Spanish sample of participants performed an experiment in which an infrared eye-tracking system together with a memory test were used to check the level of attention and later recall of both mandated and novel warning labels inserted in a tobacco advertisement.

METHOD

Participants

A sample of 164 Spanish undergraduate students was recruited for the experiment. Due to technical problems, the data of 32 participants were discarded from the analyses. Hence, the final sample consisted of 132 participants (50% smokers and 50% non-smokers). Mean age was 20.91 years (SD = 1.22). All of them scored for at least 20/20 visual acuity using a Snellen wall chart (no one was excluded for this reason), and gave their written consent fol-

lowing the official protocol of the University Bioethics Committee. On average, the mean consumption for the group of smokers was 14.3 cigarettes per day (SD = 5.1), whereas participants of the non-smoker group reported never having smoked. It must be highlighted that the data were recollected prior to the introduction in Spain of actual guidelines that require large-text warning labels on cigarette packs.

Apparatus and Measures

Participants' eye movements were recorded by means of an Applied Scientific Laboratories ASL 504. This eye tracker works following a corneal reflection technique: an infrared beam of light is emitted toward the participant's eye; the line of gaze is calculated by the system taking into account relative positions between infrared corneal reflection and pupil center. Sampling speed of the camera was 50 Hz, which means that the eye tracker recorded participants' line of gaze every twenty milliseconds. From this raw data, several parameters concerning eye movement behavior were computed on the health warning using EYENAL software developed by ASL: a) time to first fixation, b) number of fixations, and c) dwell time. The time to the first fixation was the time elapsed from the onset of the stimulus until the health message was first fixated. Fixations were obtained applying the default EYENAL criterion that reports the presence of a fixation when the point of gaze remains within a 1° x 1° area for at least 100 ms. Finally, in order to make the results comparable with those of previous work (Krugman et al., 1994), *dwell time* was defined as the total time viewing the warning (or total amount of time for all fixations on the warning zone).

In addition, ERTS software (*Experimental Run Time System* by Berisoft) was used to display the ads on a monitor. This software enabled the synchronization between stimuli presentation and the starting of eye recording by means of TTL signals sent from the computer to the eye tracker through the parallel port.

Stimuli

An advertisement of a popular brand in Spain from *Altadis Company*, named *Fortuna*, was selected (see Figure 1). This controversial spot tried to persuade young people that when buying *Fortuna* a 0.7% of the pack price would be donated to Non-Governmental Organizations (NGOs). Three versions of this ad were used. Version 1 was the original ad including the general warning message proposed by Spanish health authorities (warning text translates as: *"The health authorities warn that tobacco seriously damages your health"*). The other two versions were novel messages to all participants at the time that this experiment was carried out, and were modifications upon the original warning message: *"Smokers inhale carbon monoxide"* (version 2) and *"Smoking can kill you"* (version 3). The font size used was identical for the three versions. Because these three different versions of cigarette advertisements were used, participants were randomly assigned to one of the three experimental conditions (44 participants in each group, with 50% of each group being smokers). In addition, three ads of *eau du cologne, mobile phone*, and *casual clothing* were used as distracters in all three conditions. So, a total set of four stimuli was explored by each participant, the tobacco ad being randomly counterbalanced among the three distracters.

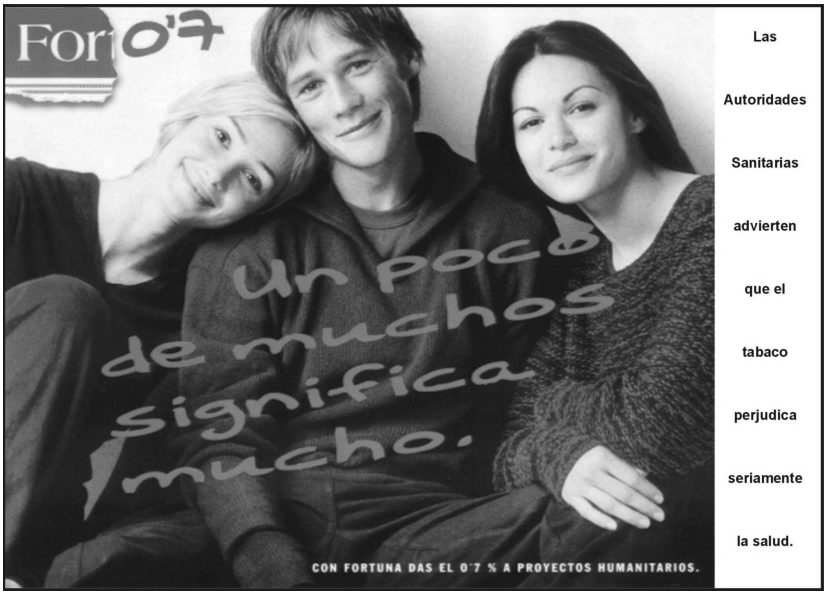

Figure 1. Version 1 of the ads with mandated warning label: *The health authorities warn that tobacco seriously damages your health*. Version 2 included the novel message *Smokers inhale carbon monoxide*, and version 3, *Smoking can kill you.*

Task and Procedure

Experimental sessions were individual. Upon arrival, the participant was made familiar with the laboratory. Previously, an individual self-administrated questionnaire provided information about several variables such as age, gender, buying habits, and tobacco consumption. Immediately after, the participant was accommodated inside a soundproofed compartment in front of a computer screen. Although a chinrest was used in order to avoid abrupt head movements during eye recording, position was very comfortable as the ASL eye tracker 504 is very unobtrusive (nothing is attached to the user). From the observer's position, the tobacco ad subtended about 30° (horizontal) x 22° (vertical) of visual angle.

The participant's task was to explore freely the advertisement displayed on the screen, spending the time that he/she would employ if the ad was encountered during the reading of a magazine. The stimuli were presented one at a time using the ERTS software, and remained visible until the subject pressed the button of a response device. Prior to the onset of each stimulus, the ASL 504 eye-tracking system was calibrated in order to ensure a proper eye recording. The numbers 1-9 arranged in a 3 x 3 array (blue background with number 1 at the upper-left vertex of the screen, and number 9 at the lower-right vertex) were displayed on the screen, and the participant was asked to fixate each

number in turn. Average calibration time was less than one minute. Previous to the onset of each stimulus, participants were required to look at number 5 of calibration screen (center of the screen) to ensure that all of them started the visual exploration at the same location.

Once the visual exploration of the four advertisements was completed, a recall test was applied where a paper copy of the viewed advertisements was given with a blank area replacing logos or slogans; each participant was asked to fill in the blank masked area with the corresponding text -as detailed as possible- remembered from the original ad. For the tobacco ad the area was always the warning label. Cues about the application of a posterior recall test were never given; and the real purpose of the experiment was not known by participants, who were told that the main interest of the research was to study general consumption habits.

RESULTS

Several analyses of variance (ANOVAs) were calculated with recall data and eye movement measurements averaged across participants. Bonferroni follow-up tests were performed to locate mean differences when significant main and interaction effects were found among groups.

Recall data. Following the same criteria as in a previous research (Krugman et al., 1994), three trained judges scored the memory performance on the masked warning area of the tobacco advertisement that participants had to fill in. The categories *blank or incorrect, warning presence noted, concept correct*, or *exact correct* wording were scored from 1 to 4 respectively. The result of this procedure yielded significant positive inter-judge correlations that ranged from $r = 0.89$ to $r = 0.95$. Discrepancies among judges were solved using a majority criterion: if an agreement between two judges existed, the corresponding category was assigned. There were no cases of disagreement among the three judges.

Table 1 summarizes the percentage of participants that scored in each level for the three ad versions. A proportion test carried out indicated that the original message reached 75% of exact recall, with significant lower percentages in the other two modified versions (18.2%, $p < 0.001$ in both cases). It is noteworthy that 25% and 38.6% of the participants that viewed version 2 and 3 respectively noticed the presence of a warning label, but only 18.2% were able to recall the exact message. Finally, the percentage of blank or incorrect responses was higher for the new messages as opposed to the mandated one.

Table 1. Percentage of participants in each recall level for the three ad versions ($n = 44$ in each version)

Recall Level	Version 1	Version 2	Version 3
Exact message	75.0	18.2 **	18.2 **
Correct concept	11.4	22.7	15.9
Warning presence noted	2.2	25.0 **	38.6 **
Incorrect or miss	11.4	34.1*	27.3

A proportion test between version 2 or 3 and the original message (version 1) indicated significant differences: * $p < 0.05$ and ** $p < 0.001$

To know if the presence of these new warning labels had any effect on recall level, as a function of smoking habit, a factorial 3 (ad version: 1 vs. 2 vs. 3) x 2 (habit: smokers vs. non-smokers) ANOVA was carried out. Results showed a significant main effect of ad version [$F(2,126) = 20.924$, $p < 0.0001$], but neither the habit main effect nor the interaction were significant ($p = 0.331$ and $p = 0.873$, respectively). As Figure 2 shows, the recall was similar between smokers and non-smokers for the three versions; in contrast, the mandated warning had a better recall than the new versions (Bonferroni, $p < 0.001$ in both cases) with no significant differences between these last two.

Eye movement data. Time to first fixation, mean number of fixations, and mean dwell time on warning were entered in a 3 (ad version: 1 vs. 2 vs. 3) x 2 (habit: smokers vs. non-smokers) ANOVA. Main effects and interactions were not significant in any of the three performed analyses ($p > 0.123$ in all cases). Time to first fixation, mean number of fixations, and mean dwell time on warning were similar among the three ads, for both smokers and non-smokers (see Table 2).

Finally, the percentage of participants fixating on the warning was analyzed by means of a proportion test, indicating that new ad versions did not attract attention to a bigger extent than the unmodified, without any effect of smoking habit again (see Table 3). In fact, it was noteworthy that ten participants did not even look at the warning area.

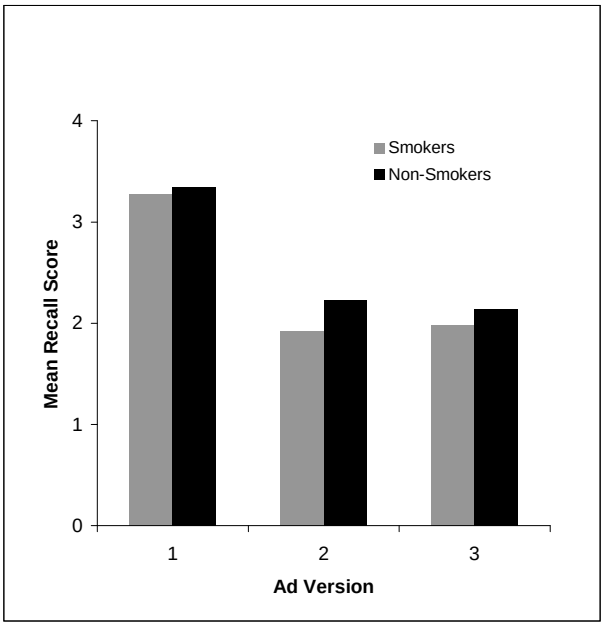

Figure 2. Mean recall score of warning message for the three ads as a function of smoking habit

Table 2. Eye movement measures on warning as a function of ad version and smoking habit

Eye movement measure		Version 1	Version 2	Version 3
Time to first fixation	Smokers	6.90 s	6.22 s	7.13 s
	Non-smokers	5.49 s	6.83 s	5.48 s
Mean number of fixations	Smokers	8.00	6.23	4.59
	Non-smokers	6.14	7.95	6.05
Mean dwell time	Smokers	2.58 s	1.91 s	1.51 s
	Non-smokers	2.00 s	2.53 s	1.88 s

Analyses did not yield any significant differences in eye movement measures as a function of ad version and smoking habit (s = seconds)

Table 3. Percentage of smokers and non-smokers fixating on warning for each ad version

Habit	Version 1	Version 2	Version 3
Smokers (n = 62)	95.5%	90.9%	86.4%
Non-smokers (n = 60)	90.9%	95.5%	95.5%

A proportion test did not indicate any significant differences. Ten subjects of the total sample (4 smokers and 6 non-smokers) did not look at the warning at all

Relating recall level and gaze behavior. A final set of analyses were carried out to study the relationship between the recall of the warning label and oculomotor measures. For this purpose, the sample was dichotomized into two sub-samples as a function of the recall level. Participants classified in *blank or incorrect* or *warning presence noted* categories were assigned to the low-recall group, and those classified in *concept correct* or *exact correct wording* categories to the high-recall group. Time to first fixation, mean number of fixations, and mean dwell time on warning were introduced in a 3 (ad version: 1 vs. 2 vs. 3) x 2 (recall level: high- vs. low-recall) x 2 (habit: smokers vs. non-smokers) ANOVA. The only significant effect was due to the recall level in any of the three performed analyses, with no other main effects or interactions observed. Once again, the new ads were neither more efficient in capturing and holding visual attention than the mandated one, nor did smoking habit have any influence. However, as can be seen in Table 4, the eye movement measures revealed the presence of cognitive skills related to information retention. Though high recallers took slightly more time to direct the first fixation on the warning area than low recallers [$F(1,110) = 4.654$, $p = 0.03$], the high-recall group exhibited a significant greater mean number of fixations [$F(1,120) = 19.766$, $p < 0.0001$] and a longer mean dwell time [$F(1,120) = 26.290$, $p < 0.0001$] on the warning than the low-recall group. In conclusion, those participants

Table 4. Eye movement measures on warning for high (n = 71) and low recallers (n = 61)

Eye movement measure	Recall level	
Time to first fixation	High	6.72 s
	Low	5.83 s
Mean number of fixations	High	8.17
	Low	4.54
Mean dwell time	High	2.71 s
	Low	1.34 s

For each eye movement measure, the analyses did yield significant differences between high and low recall level (s = seconds)

that came slightly later to the warning location spent more time exploring it, exhibiting long gazes as well as a high number of fixations.

DISCUSSION

The aim of this research was to evaluate the effectiveness of new warning labels in capturing and holding visual attention, taking into account the presence or absence of the smoking habit. Memory measures and physiological eye-tracking recordings indicated that new text-only warnings inserted in tobacco ads were neither better recalled nor more quickly fixated than mandated messages. Neither were there any differences in measurements comparing smokers and non-smokers.

Viewers recalled the classic warning better than the new versions, suggesting, as proposed by memory models, that the mandated warning has been firmly learned over time, resulting in an advantage in subsequent recall (see also Krugman et al., 1994). The introduction of novel messages did not generate a facilitative effect on memory. Though a very high percentage of participants viewing a new message directed their gaze at the warning area, only 18.2 percent had an exact recall of it. The effect of previous learning was clearly evident in ten participants that viewed a modified version, who filled in the memory task with the classic message that they had never seen in the assigned condition.

Moreover, perhaps most importantly, eye-tracking recordings offered interesting suggestions for the initial engagement of attentional mechanisms and the later cognitive processing of health messages inserted in ads. Regardless of smoking habit (smokers vs. non-smokers), novel messages did not gain participants' attention more quickly than the mandated one, as revealed by the analysis of the time before the first fixation over the warning. In addition, as pointed out by the mean number of fixations and mean dwell time, novel messages were not processed more deeply than the original one. Rather, the time spent looking at the warning was similar among the three versions.

Finally, having dichotomized the sample into two recall levels (high and low), it was observed that oculomotor measures were closely linked to the recall of the health

message, as expected according to the research relating eye movements and information processing (Hyöna et al., 2003; Rayner, 1998). Although individuals with high level of recall directed the first fixation to the warning almost one second later than low recallers, the former group had a deeper cognitive processing of the health message, with a greater number of fixations and a longer viewing period.

The present findings partly replicate and extend those of Krugman et al. (1994). As in their study, our participants exhibited a higher recall of the old version of the warning than newer ones; also, the number of fixations and the total viewing time devoted to the health message showed a positive relationship with recall level. However, contrary to Krugman's results, our eye-tracking data neither support the hypothesis that novel warnings capture the viewers' attention more quickly than the mandated one, nor that novel warnings are cognitively processed to a greater extent. Moreover, in our research, individuals with a higher level of recall directed their first gaze at the warning message later than the low recallers. Finally, smoking habit did not have any influence on the results, and given that this manipulation was a novelty introduced in our work for the first time, no comparisons are suitable with previous data of Krugman and colleagues. Although the presence of attentional biases in smokers has been well established in other experimental paradigms such as modified Stroop or visual probe tasks (Field, Mogg, Bradley, 2004; Mogg et al., 2003; Waters, Feyerabend, 2000), results of the present research do not seem to reveal an analogous mechanism during the exploration of an advertisement with a warning inserted in it. No differences were found in eye movement measurements between smokers and non-smokers: the initial time spent to orientate visual attention towards the warning and the time devoted to the later processing of the warning were similar for both groups. Although it is supposed that a health message should stimulate thoughts about effects of smoking (Borland, 1997), our findings suggest that the presence of a warning label inserted in an ad does not seem to act as a meaningful cue responsible for different scanning behaviors between smokers and non-smokers.

A major limitation of our study is related to the age of participants. Although the attentional engaging process over health messages could be similar regardless of age, the generalization to an adult subpopulation is an open question and only further research will clarify this issue. Similarly, the social relevance of the message outlined by tobacco publicists - appealing to an altruistic cause to encourage the buying behavior among young people - might have exerted some influence, taking away a fair amount of attentional resources from the warning.

Focusing on the attentional issue, our research offers some significant implications for the development of tobacco advertising regulations. First, knowledge of how a health message inserted in an advertisement gains the attention of persons should become a cognitive criterion for creating and evaluating efficient warning labels (Krugman, Fox, Fischer, 1999). The initial detection of a warning is a preceding step closely connected with early stages of visual processing, where health messages are competing with other perceptual features inserted in the ad to capture the attention of viewers (Henderson, Hollingworth, 1999). At a later period, the comprehension of the message constitutes a high-level cognitive processing, with a narrow relationship between the time spent reading

the warning and its corresponding recall. Second, cigarette warnings appear to be equally attended to by smokers and non-smokers. The time spent looking at the warning message and the ability to remember it appear to be identical, regardless of smoking habit. As a result, it does not seem to be necessary to develop different attentional strategies devoted specifically to each group. This lack of differences in the attentional level contrasts with recent evidence obtained in the field of attributional preferences, with smokers attributing the warning messages to medical studies and non-smokers to governmental authorities (Guttman, Peleg, 2003). Finally, although text-only warnings are a low-cost anti-smoking strategy, novel messages in tobacco print advertising do not seem to be as effective as expected either in gaining participants' attention more quickly than the mandated one, or in generating a facilitative effect on memory. Some researchers suggest that a text with a large point font or high contrast clearly enhances the recall and preserves therefore its attentional effectiveness (Truitt et al., 2002). Nonetheless, inserted in a magazine or billboard advertisement, text-only warnings can be highly manipulated by tobacco publicists and easily masked with other perceptual elements and alternative messages.

According to a Canadian survey, the application of graphic imagery may be a much more effective deterrent than text-only messages (Hammond, Fong, McDonald, Cameron, Brown, 2003). Embedding vivid colorful images in ads to capture consumers' attention and illustrate visually the damages of smoking - such as is being attempted on Canadian or Brazilian cigarette packs - may improve the visual detection of warnings, both of smokers (to encourage quitting) and non-smokers (to avoid starting a harmful habit). The insertion of these impacting images into the visual arrangement of an ad (not only on the packs of cigarettes themselves) would probably not only act as an effective attentional cue, but would also provide visual elements which tobacco publicists may find more difficult to mask than text-only messages. Lines of future research using eye-tracking techniques will clarify how these new-generation health messages gain the visual attention (Crespo, Cabestrero, Barrio, 2005), an additional challenge being to discern how the pictorial information and the corresponding text are visually integrated (Rayner, Rotello, Stewart, Keir, Duffy, 2001). Lastly, new efforts that involve a more exhaustive assessment of the attentional shifts over time should prove useful in knowing whether health messages are skipped to avoid information that is either irrelevant or aversive.

In summary, as revealed by memory measures and eye movement data, new versions of text-only warning labels inserted in tobacco advertisements are neither better recalled nor more quickly fixated than mandated messages. Also, the time spent looking at the warning message, as well as the ability to remember it, appear to be identical regardless of smoking habit. From an attentional perspective, tobacco advertising policies must take into account that novel text-only warnings inserted in cigarette print ads do not seem to be as effective as expected. Based on previous research of our group, we suggest that the use of new strategies - e.g., vivid colorful images- would be helpful in gaining attention and, consequently, in alerting consumers to the adverse effects of smoking. Only new lines of research will clarify this issue.

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VIZUÁLNA POZORNOSŤ VENOVANÁ ZDRAVOTNÝM VAROVANIAM V REKLAME NA CIGARETY: SLEDOVANIE POHYBU OČÍ U FAJČIAROV A NEFAJČIAROV

A. Crespo, R. Cabestrero, G. Grzib, P. Quirós

Súhrn: Predchádzajúci výskum pomocou fyziologického prístupu sledovania očných pohybov ukázal, že originálne zdravotné varovania v tabakových reklamách lepšie priťahujú pozornosť než úradne nariadené oznámenie. Doteraz sa však v žiadnej štúdii nesledovali pohyby očí fajčiarov a nefajčiarov, aby sa zistilo, či nové varovanie vo forme štítkov s textom efektívne pútajú a udržujú zrakovú pozornosť, pričom sa bralo do úvahy, či je jednotlivec fajčiar alebo nie. Použili sa tri verzie reklamy: 1. verzia bola pôvodná reklama s úradne nariadeným varovaním, a 2. a 3. verzia boli modifikácie pôvodného varovania. Výber tvorilo 132 Španielov (50% fajčiarov a 50% nefajčiarov), ktorí sledovali jednu verziu reklamy, pričom sa zaznamenávali ich očné pohyby. Pomocou sledovania očných pohybov sa zisťoval index zaujatia pozornosti zdravotnými varovaniami. Vzápätí po prezentácii reklamy jednotlivci plnili maskovanú pamäťovú úlohu. Výsledky ukázali, že lepšie sa reprodukovala pôvodná verzia varovania, než tie novšie. Okrem toho, v porovnaní s predchádzajúcim výskumom, údaje o očných pohyboch ukázali, že nové varovania v reklamách na tabakové výrobky si jednotlivci nevšimli rýchlejšie a ani ich lepšie kognitívne nespracovali. Naše výsledky teda nepresvedčili, že by varovné nápisy vložené do reklamy priťahovali pozornosť. Svedčí o tom čas venovaný sledovaniu varovania, ako aj schopnosť zapamätať si ho, ktorý bol rovnaký u fajčiarov ako aj nefajčiarov. Náš výskum ponúka isté dôsledky pre rozvoj politiky tabakovej reklamy.