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Attention to food health warnings in children's advertising: a French perspective

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ABSTRACT

Objectives: The objective of this study was to evaluate how much attention children pay to health warnings displayed on TV and print advertisements promoting drinks with added sugar, salt, or artificial sweeteners, and processed food products.

Study design: The research was conducted in France among 50 children, using an eye-tracking system to record participants' eye movements on TV and print advertisements.

Methods: To reproduce the natural exposure conditions to TV commercials, the children were asked to watch a 12-min extract of an animated comedy film with two commercial breaks sandwiched between the extract. For the print ads, all the children were exposed to eight ads. The use of an eye-tracking system gave an objective measurement of the attention paid to the food health warnings.

Results: The results show that children exposed to these food product advertisements pay little or no attention to the warnings. Only 18% of the children made more than one eye fixation on the central message of the health warnings (the part displaying the health recommendation) for TV commercials, and almost no attention was given to warnings displayed on the print ads.

Conclusions: This study shows that the French authorities should take stronger and more decisive measures to help children adopt healthy behavior because the current health warnings appear insufficient to inform children.

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Introduction

The problem of obesity and being overweight are currently a primary source of concern worldwide. In 2014, the US National Institutes of Health (NIH) published a news release entitled 'NIH study finds extreme obesity may shorten life expectancy by up

to 14 years'.¹ Two years later, the UK National Health Service (NHS) stated that obesity is 'now a leading cause of death, especially in men'.² In 2016, the World Health Organization reported that more than 1.9 billion adults worldwide were overweight, 650 million of whom were obese, and 41 million children younger than five years were overweight or obese.³ Such public health issues also prevail in France. For example, in the

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study by Matta et al.,⁴ the prevalence of individuals who are overweight was 41.0% and 25.3% in men and women respectively, and that of individuals who are obese was 15.8% and 15.6% in men and women, respectively. All of these figures are alarming and emphasize the urgency of the situation. Several studies have shown that marketing stimuli play a role in this situation. For example, a recent meta-analysis concluded that acute exposure to food advertising increases food intake in children.⁵

In France, Article L. 2133-1 of the French Public Health Code took effect in 2007 to combat this public health issue.⁶ Health warnings must now be displayed on all advertisements promoting drinks with added sugar, salt, or artificial sweeteners, as well as processed food products. These health warnings have been in place for a decade, but no academic research has been conducted to ascertain whether audiences pay any attention to them or not. The present study therefore aims to address the viability of this regulatory measure, particularly among children, a population giving rise to increasing concern.

The regulatory measure

Various studies have demonstrated the impact of marketing exposure in general, and food ads in particular, on children's food preferences, purchases, and eating behaviors.^{7–9} Thus, in 2004, the French government began a consultation process with food manufacturers aimed at regulating advertising exposure, particularly advertisements targeting children. Other European countries had already taken action against such marketing influences, including the United Kingdom which was one of the first countries to ban unhealthy food product advertising during children's television airtime (even though children may still be exposed to such advertisements by watching television outside these 'children's airtimes').¹⁰ After extensive discussion between public organizations and stakeholders in the food industry, the Public Health Act (2004) was adopted, requiring a health warning to be displayed on all advertisements for drinks with added sugar, salt, or artificial sweeteners, as well as processed food products. The initial idea of banning food advertisements targeting children was therefore abandoned, and in the end, no specific protection for children was provided by the Act. The Act to introduce legislation laying down the specific requirements for such health warnings was adopted, but it only came into effect on March 1st 2007.¹¹ All processed food and drinks (according to the definition set out in Article 2(1) (o) of Regulation (EC) No. 852/2004) are affected by this regulatory measure, while the following products are exempt:

1. Raw products, such as fruit, vegetables, eggs, spices, and herbs.
2. Products that have only been cut or minced, such as meat and fish.
3. Frozen or canned products with no additives except water.
4. Drinks with no added sugar, salt, or artificial sweeteners, such as tea, coffee, some fruit juices, and milk.

Four health warnings are used in France: (i) 'For your health, avoid snacking between meals'; (ii) 'For your health,

exercise regularly'; (iii) 'For your health, avoid eating too many foods that are high in fat, sugar or salt'; and (iv) 'For your health, eat at least five fruits and vegetables per day'. These are followed by a mention of the government's healthy eating and exercise website www.mangerbouger.fr¹² (note that *mangerbouger* can be translated into 'eat and move'). One of these four health warnings must be displayed on every food and drink advertisement (apart from the aforementioned exemptions). The health warning has to be clearly visible and must occupy at least 7% of the advertising space on both TV and print ads. However, to make the health warning less prominent, advertisers mainly place it at the bottom of the ad where it is less likely to be read. On the radio, the health warnings are indicated orally at the end of the advert. The four health warnings must appear at equal frequency over the course of a brand's advertising campaign.

The delegated legislation is based on the paradigm of the well-informed consumer, and as such, its goal is to inform consumers about potentially dangerous eating behaviors and to promote healthy eating and exercise. According to the well-informed consumer paradigm, people are able to make healthier decisions when proper information is available.¹³ The regulatory framework is based on this paradigm as it assumes that consumers will adopt healthy eating behaviors and will exercise more as a result of their exposure to health warnings. However, as a 2017 Institut National de la Santé et de la Recherche Médicale = the French National Institute of Health and Medical Research (INSERM) report states, '*expectations regarding consumers are high: they are expected to see the information provided, select, read and understand it, and act accordingly*'.¹³ The first step toward achieving this aim is to ensure that these health warnings attract consumers' attention. A large body of literature on attentional processes report that it is impossible for an individual to extensively process all information displayed simultaneously.^{14,15} As such, individuals select specific areas/information in the visual field and process it more deeply.¹⁶ In advertisements, consumer attention is usually drawn to the center of the ad and rarely to the bottom where the health warnings are placed. The risk is therefore that consumers will not look at these warnings.

The present study is the first to test whether children pay attention to these health warnings, ten years after their introduction. We conducted an eye-tracking study involving 50 children. Previous research has shown eye-tracking systems to be a valuable measure of attention, more reliable than memory-based verbal measures.¹⁷ The research design was presented to and approved by the Ethics Committee of the Graduate School of Management at the university where the study was conducted (France).

Methods

Participants and stimuli

Fifty children (23 boys and 27 girls) ranging in age from 8 to 11 years (mean [M] = 9.64; standard deviation [SD] = .85) took part in the study. The children attended a school in a small town on the outskirts of the main city in Brittany in

France. To the authors' knowledge, this is the first study specifically measuring attention paid to health warnings among children. As such, a situation that would not be detrimental to the regulatory framework was chosen. The selection criteria involved children aged from 8 to 11 years in a French primary school (corresponding to the fourth and fifth grades in the US educational system), which meant that they were able to read the health warnings on the TV and print ads. All the participants had normal or corrected to normal vision.

To reproduce the natural exposure conditions to TV commercials, the children were asked to watch a 12-min extract of an animated comedy movie (Ice Age). Two commercial breaks were sandwiched between the extract, at the fourth and the tenth minutes. Each commercial break was composed of six commercials targeting child consumers: four commercials promoting food products and displaying a health warning and two non-food distractor commercials. Each child was therefore exposed to eight food commercials displaying a health warning and 12 commercials in total (each commercial lasting 20 s). All the children were exposed to each existing health warning twice. The warning 'For your health, avoid snacking between meals.' www.mangerbouger.fr¹² was displayed on cheese (Entremont) and rice (Uncle Ben's) commercials, 'For your health, exercise regularly.' www.mangerbouger.fr¹² was displayed on potato chips (Pringles) and breaded fish (Iglo) commercials, 'For your health, avoid eating too many foods that are high in fat, sugar or salt.'¹² was displayed on soup (Leclerc) and breakfast cereal (Kellogg's) commercials, and 'For your health, eat at least five fruits and vegetables per day.' www.mangerbouger.fr¹² was displayed on breakfast cereal (Chocapic) and canned vegetables (D'aucy) commercials.

For the print ads, all the children were exposed to eight ads (two ads per health warnings × the four existing warnings). They were displayed for 3 s each, and the exposure duration was set on the software control (SMI Experiment Center). The warning 'For your health, avoid snacking between meals.'¹² was displayed on cookies (Lu) and chocolate bar (Nestlé) commercials, 'For your health, exercise regularly.' www.mangerbouger.fr¹² on ice cream (Häagen-Dazs) and prepared potato (Findus) commercials, 'For your health, avoid eating too many foods that are high in fat, sugar or salt.' www.mangerbouger.fr¹² on canned tuna (Petit Navire) and jam (Bonne Maman) commercials, and 'For your health, eat at least five fruits and vegetables per day.' www.mangerbouger.fr¹² on yoghurt (Mamie Nova) and canned vegetables (Cassegrain) commercials.

Procedure

Around two months before the study, the researchers met with the school director and then the teaching staff who all gave their agreement regarding the children's participation in the study. Parent consent was sought via a form included in the home liaison diary informing parents about the purpose of the study and asking them if they would provide written consent for their child(ren) to take part. The experimental setting was described (viewing of an extract of the movie 'Ice Age' in which commercials would be embedded and attention would be measured using an eye-tracking device).

On the day of the study, the researcher went to both classrooms and asked the children whether they would like to take part in a study in which they would be requested to individually watch a movie extract. The researcher made it clear that it was up to each child whether or not they wanted to participate in the study. This instruction seemed to be well understood as six children said they did not wish to participate, even though their parents had given their written consent.

Each child was individually invited to the classroom that the school had set aside for the study and asked to sit in front of a 22-inch screen under which a binocular eye-tracking system (SMI RED250) had been installed that recorded eye position every four milliseconds. This is a non-intrusive system (no equipment is placed on the participants) which gives participants relatively large freedom of movement. The eye-tracking software (iView X) enabled precise monitoring of the children's eye movements on the screen after a calibration procedure. Before the calibration process, the children were told that they were going to watch an extract of a movie and that they could leave the study at any time for any reason. All the participants then successfully performed a calibration procedure that consisted of following a moving circle on the screen with their eyes. This calibration procedure enables the eye-tracking system to precisely localize eye position and ensures reliable eye movement recordings. The movie was then shown. At the end of the movie extract, the researcher asked the child if he/she wanted to participate in the second part, which consisted of viewing print ads. All of the children agreed to continue and took part in the second part of the study. They were first exposed to the four distractor ads, followed by the eight target food ads. Each ad was displayed for 3 s. At the end of the study, the researcher debriefed each child without revealing the true purpose of the study to avoid spillover effects during the school breaks and then thanked them for their participation. The debrief indicated that the children had actually enjoyed participating in the study (which is not surprising because the main part consisted of watching an animated movie extract). Nine weeks later, the researcher returned to the school to explain the real aim of the study to the children.

Eye-tracking data

The eye-tracking data were analyzed and extracted using eye-tracking software (BeGaze, SMI). To this end, we first created areas of interest (AOIs) corresponding to the area(s) within the stimulus from which we wanted to extract the eye-tracking metrics. Two AOIs were chosen: one corresponding to the entire message (the whole health warning, e.g., 'For your health, avoid snacking between meals.'¹²) and another corresponding to the central message – the part conveying the health recommendation, e.g., 'avoid snacking between meals' – which is the only part of the four different warnings that varies. The two standard eye-tracking metrics, the number of eye fixations and eye fixation duration, were extracted for both AOIs of each commercial. The number of eye fixations corresponds to the total number of eye fixations within an AOI. Eye fixation duration is the total duration of all eye fixations in the AOI.

Table 1 – Distribution of participants (TV ads/children).

	For your health...				Mean
	...Avoid snacking between meals.	...Exercise regularly.	...Avoid eating too many foods that are high in fat, sugar or salt.	...Eat at least five fruits and vegetables per day.	
Whole health warning					
Participants who made no fixations on the message	33	23	8	20	21 (42.9%)
Participants who made at least one fixation on the message	16	26	41	29	28
Participants who made only one fixation on the message	12	15	9	12	12 (24.5%)
Participants who made more than one fixation on the message	4	11	32	17	16 (32.6%)
Total number of participants	49	49	49	49	49
Central message					
Participants who made no fixations on the message	41	28	14	26	27 (55.1%)
Participants who made at least one fixation on the message	8	21	35	23	22
Participants who made only one fixation on the message	6	16	15	15	13 (26.5%)
Participants who made more than one fixation on the message	2	5	20	8	9 (18.4%)
Total number of participants	49	49	49	49	49

www.mangerbouger.fr¹².

Italic represents the Participants who made at least on fixation on the message.

Results

The number of participants who looked at the health warnings displayed on the TV ads

One participant was excluded from the analysis of this part of the study because of unsatisfactory data recording. This led to a final sample of 49 children.

The results reveal a clear lack of attention to health warnings: 42.9% of children (21 of 49) did not make any eye fixations on the message (Table 1). Moreover, 24.5% made only one fixation. In other words, more than two-thirds of the children made no or one eye fixation.

With respect to the central message only, 55.1% made no eye fixations on this part of the message, 26.5% made a single fixation, and 18.4% made more than one fixation. As it is impossible to read the content of the message by making solely one eye fixation (the mean duration of a fixation on the health warnings is less than 300 ms), we can conclude that at least 81% of the children did not process the health recommendation.

Attention paid to the health warnings displayed on the TV ads

Considering only the children who made at least one fixation on the health warnings, the results show that, on average, they made 1.58 eye fixations on the health warnings and looked at them for only 375 ms. Considering only the central message, attention measures drop to .84 eye fixation and 225 ms. The non-parametric Friedman's analysis of variance test was used to compare the four different health warnings. No difference was found between the four health warnings (except for 'For your health, eat at least five fruits and vegetables per day.'¹² that received significantly the highest number of fixations). The same results were found for the central message.

The number of participants who looked at the health warnings on the print ads

For this part of the study, all the data recordings were satisfactory, yielding a final sample of 50 children. The results reveal an enormous lack of attention to health warnings: among the 50 children, 47 made no fixations on the warnings, two made a single fixation, and only one made more than one fixation. Considering only the central part of the message, the results show that 48 children did not make any fixations on the messages, which means that only two children looked at them.

Attention to health warnings on print ads

As the descriptive eye-tracking data showed that children paid almost no attention at all to the health warnings displayed on the print ads, no further analysis with these metrics was conducted (the number of eye fixations and fixation duration).

Discussion

This study shows that children, who are a highly vulnerable target audience, pay almost no attention to the health warnings displayed on TV and print ads. The regulatory measure of displaying health warnings on food and drinks was enacted in France because overweight and obesity has become a serious public health concern among the French population as a result of unhealthy eating behaviors and a lack of exercise. The aim was therefore to persuade people, and particularly children, to change their attitudes and behaviors toward food products and exercise, as evidenced by the content of these warnings (e.g., 'For your health, avoid eating too many foods that are high in fat, sugar or salt.'¹²). However, the aforementioned results are hardly surprising, and we could even say that it

was somewhat utopic to expect children to take notice of health warnings written on adverts. According to the elaboration likelihood model by Petty and Cacioppo,¹⁸ people process messages through either a central or a peripheral route, depending on their motivation and ability to process the message in question. To induce a sustainable behavioral change, a persuasive message needs to be processed through the central route. Ability and capacity are the two core concepts of this model.

Do children have the ability to process the health warnings displayed on advertisements? This is doubtful. In France, children start learning to read at the age of six years (when compulsory schooling begins), and mastery of reading generally occurs between the ages of seven and eight years (which corresponds to 1st and 2nd grades). Consequently, children are exposed to a very high number of advertisements containing health warnings that they are unable to read before that age. In addition, 5% of children in mainstream schools in France find it difficult to read at the end of the first grade, and this percentage can exceed 25% in some underprivileged areas.^{19–21} Thus, children from underprivileged areas are more likely to be overweight and obese²² and should therefore be a priority target for preventive measures. The medium chosen by the public authorities to inform children – and particularly those who are most vulnerable – therefore appears inappropriate.

The second requirement for a persuasive message to be effective involves motivation to process the information. The study by Carter et al. is of great interest in this respect.²³ The authors studied 4- to 12-year-old children's capacity to discern the 'selling' and 'persuasive' intent of an advertising message. The authors argue that awareness of persuasive intent is a more sophisticated evaluation and requires cognitive defense because it entails recognizing the advertisers' attempt to 'make viewers do something they might not otherwise do' (p. 963). The results of their study first showed that a majority of children were capable of describing the selling intent of a TV commercial at around eight years and, second, that awareness of persuasive intent emerged well after this age, as only 40% of the oldest age group of their study (11–12 years) discerned that intent. Accordingly, most children have become aware that the advertisements they watch are designed to sell products at around eight years of age, but they only become aware of the action that advertisers are trying to persuade them to do (i.e., to buy the specific product advertised) at around the age of 11 years or older. Regarding participants in the same age group as the children in the present study [aged from 8 to 11 years ($M = 9.64$; $SD = .85$)], the findings of the study by Carter et al.²³ show that only 15% of children aged 8–9 years (fourth grade), 20% of children aged 9–10 years (fifth grade), and 27% of children aged 10–11 years (sixth grade) were able to detect the persuasive intent of a food TV commercial. If children are incapable of comprehending the persuasive intent of an ad, it seems even more unlikely that they will understand the 'counter' persuasive intent of the health warnings, even more so if it is displayed at the same time as the advertising message.

The present study therefore shows that this regulatory measure is highly inadequate in its present form. To protect children more efficiently (and especially young children), stronger and more decisive measures should be taken because simple informative recommendations displayed on

advertisements appear insufficient to prevent them from adopting risky and unhealthy behaviors. The decision that food advertisers should display health warnings on their advertisements was a compromise solution after the failure of the proposal put forward by the Ministry of Health to ban unhealthy food advertising during the screening of television programs aimed at children.¹¹ The results of this study show that there is a need to go a lot further than simply displaying warnings on ads, for example, by once again considering the idea of banning altogether unhealthy food advertising aimed at children.

This research has certain limitations. First, the study was conducted with children aged from 8 to 11 years. Although mastery of reading generally occurs between the age of seven and eight years (which is why we selected children older than eight years in the study), children generally start learning to read at around six years and at this age have already been widely exposed to advertisements. Future eye-tracking research could therefore be conducted with younger children. In addition, we tried to set up an experiment that was as close as possible to a natural situation by presenting the TV commercials sandwiched between a movie extract. However, the children watched the movie and the advertisements in a classroom on a computer screen, which is different from a real-life situation. Finally, using eye-tracking methodology, the study focused on visual attention alone and therefore only measured attention devoted to health warnings in print and TV advertisements. Future research could also study attention devoted to orally transmitted health warnings such as on radio advertisements for food items.

Author statements

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Ethical approval

The research design was presented to and approved by the Ethics Committee of the Graduate School of Management at the university where the study was conducted (France).

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Competing interests

None declared.

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