

# Visual impact and eye fixation of non conventional advertising (NCA) on television among young people and the elderly

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## Abstract

*The purpose of this study is to analyze the visual attention of young and older subjects while viewing TV programs snippet showing non conventional advertising formats. The results, analyzed in terms of eye fixations and heat maps, show how formats studied capture the gaze depending on their characteristics and age of the subjects. Although this type of advertising appears on the screen as a distractor element where the viewer does not intend to attend, it has a clear effect on his visual attention. These advertising formats might influence viewer's behaviour.*

## Keywords

*Non conventional advertising, eye tracker, visual attention, television, advertising*

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## Resum

*L'objectiu de l'estudi és analitzar l'atenció visual dels subjectes joves i grans mentre visualitzen fragments de programes de televisió on apareixen formats publicitaris no convencionals. Els resultats, analitzats en termes de fixacions oculars i mapes de calor (HeatMap), mostren com els formats estudiats capten la mirada en funció de les seves característiques i de l'edat dels subjectes. Tot i que aquest tipus de publicitat apareix en la pantalla com un element distractor, al qual la persona telespectadora no té intenció d'atendre, té un efecte clar sobre l'atenció visual del subjecte i podria influir en la seva conducta.*

## Paraules clau

*Publicitat no convencional, eye tracker, atenció visual, televisió, publicitat*

## 1. Introduction

### 1.1. Formats of non conventional TV advertising

The many different TV channels and the diversification of new vehicles that help to distribute audiovisual advertisements such as the internet and mobile and satellite technology are resulting in stiff competition within and outside the television industry. According to data from the *Estudio InfoAdex de la inversión publicitaria en España 2010*, television continues to be the main (conventional) medium in terms of volume of advertising business, although in 2009 TV advertising spend fell sharply (by around 23%) while internet advertising grew. The situation is starting to look more optimistic in 2010 (*Estudio InfoAdex 2011*), as TV advertising spend was higher than in 2009, both on national channels (by 2.3%) and regional (by 14.7%) and pay TV channels (by 30.1%).

Within this panorama, advertisers have been developing a whole range of non conventional strategies on television and broadcasters' programmes have gradually adopted new advertising formats we call *non conventional advertising*. However, there are many different ways to describe non conventional TV advertising such as *other advertising formats*, *new advertising formats* and *non-ad advertising* (Farré and Fernández Cavia

2005); other authors call them *special actions on television* (Ribés 2006, 2010), abbreviated to AAEE in Catalan, or *special advertising on television* or PETV (Segarra 2008).

In this article, *non conventional advertising* (NCA) is used to refer to communication or commercial advertising on television that is not present in the form of advertisements; i.e. that differs from a conventional spot. The clearest difference between both kinds of advertising is that a spot is shown totally independently of the programmes while this does not happen in most NCA formats. Although the spot is still the most widely used format on television, the advertising industry is experimenting with these alternative formats that could be used as complements and enable some of the problems threatening TV advertising to be avoided, such as saturation and audience fragmentation, among others (Farré and Fernández Cavia 2005). To date, NCA is believed to have a high level of efficacy, awareness and recall given that, as it can be located in preferential and outstanding positions, it is capable of avoiding the phenomenon of zapping (Segarra 2008).

The use of NCA on television is constantly evolving. The search for and appearance of new formats and new combinations (hybrids) make it difficult to classify as different criteria can be used, such as the duration of advertising formats, their relation to programming (interposed, attached, inserted or replaced), the

advertiser's degree of control over the final result of the commercial message and how easy it is for viewers to identify the advertising format as a message with a commercial purpose (Farré and Fernández Cavia 2005). One of the most recent classifications, made by Segarra (2008), considers the following special formats that might be found on television channels:

- Brand placement.
- TV sponsorship (of TV programmes or sections).
- Televised sponsorship (references, via a logo, to events, acts or other advertiser sponsorships).
- Multi-screen or split-screen (when the TV programme being broadcast is seen at the same time as the advertising messages).
- Morphing (change or transformation of the channel's logo or of the advertiser's communication).
- TV promotions.
- Infomercials.
- Internal spaces within the programme.
- Supers.
- The channel advertising itself or its programmes.
- Bartering programmes (when the advertiser creates the TV content)
- TV sales.

This article analyses three NCA formats with shared characteristics: they have a more or less short duration and appear immersed and integrated within the TV programme, without interrupting it:

#### a. Supers

Supers are graphic advertisements, static or moving, with text and/or image, that appear on a part of the TV screen, usually at the bottom, for a few seconds and show an advertising message to the audience while it is watching a programme. A super doesn't interrupt the programme's viewing and, as it only lasts a short time, makes the programme relatively dynamic. Supers used on television are usually innovative and creative.

#### b. Animated visual symbols

This format, also called morphing, initially consisted of an animated transformation of the channel's (or producer's) logo into the advertiser's logo or object. It appears suddenly from time to time and doesn't last long. It doesn't have a specific size but is usually smaller than the other formats. As an advertising format, it can be used to attract viewer's attention to any part of the screen. It is currently used within programming and often without varying the original format, which might be the channel's or the advertiser's symbol, so that, in cognitive and information processing terms, it can be considered as a kind of dynamic super.

#### c. Split screen

This is a format in which, while a programme is being broadcast, the television screen is divided into two. One part shows, without sound, the continuation of the programme the viewer was watching and another, the advertising block,

with sound. The screen where the programme continues is usually smaller than the screen showing the advertising block. The aim of a split screen is to retain as many viewers as possible during advertising breaks. Although the split screen respects the desire of the viewer to watch the programme and avoids the intrusive nature of conventional advertising, the programme is clearly devalued in favour of the advertising and it often lasts longer than a super. Use of a split screen is associated with long programmes, often live, that employ this format to ensure viewers don't lose the thread of the programme they're watching.

The aim of these NCA formats is to attract viewer attention, encourage them to buy or use the product or service being advertised and to boost loyalty to the channel's programming. By ensuring the programme isn't interrupted, they attempt to avoid the zapping phenomenon, which leads to the conclusion that studying such formats is important and strategic.

### 1.2. Visual attention and advertising

If we consider the cognitive processes involved in processing information, supers, split screen and morphing partly share the kind of cognitive processing a viewer (subject) carries out of the information (advertisement): they are integrated within the programming and last more or less a short time; regarding how a viewer identifies them, the split screen is easy to recognise, while supers and morphing vary in their ease of identification depending on the specific characteristics of the format (where they appear, duration, colour, etc.).

From the point of view of the attention paid by the subject while watching television, the attention focused on a specific element (programme) is split (divided attention) in order to attend to a stimulus that, from the perspective of cognitive psychology, we call a *distractor* but which, from the point of view of advertising objectives, becomes a stimulus the viewer should attend to (advertisement). The aim of these NCA formats is therefore to catch the subject's attention and ensure the advertising format is *attended to* and processed.

Two questions arise out of these points:

1. Are these advertising formats really effective? In other words, to what extent do they catch the viewer's attention?
2. Do these formats affect all viewers the same?

The answer to the first question leads us to study the elements of attention related to this kind of TV advertising. According to the *attention network* model (Posner and Petersen 1990), attention covers a series of specific, independent *networks* or areas of the brain that cooperate and function together: the vigilance, orienting and executive networks of attention, characterised in cognitive, neuroanatomical, neurochemical and physiological terms (Posner, Rueda and Kanske 2007). One of the functions of the latter attention network is to direct attention towards a place in space where a stimulus appears that is potentially salient due to its unique features, either because it is

new or because it appears suddenly in view. New stimuli have the capacity to attract the attention automatically. This focusing of attention produced by the features of the stimuli is known as *exogenous* or *involuntary attention orientation*. According to this model, NCA appears as a salient stimulus that will catch the involuntary attention of the viewer.

Recently, the phenomenon of attentional capture has been investigated as part of a study of visual attention; i.e. the conditions under which non-salient stimuli obtain involuntary attentional priority. Attentional capture occurs automatically (via exogenous factors) although it is also susceptible to endogenous modulation (Ruz and Lupiáñez 2002, Botta and Lupiáñez 2010, Pacheco-Unguetti, Lupiáñez and Acosta 2009). Advertising uses exogenous stimuli to involuntarily capture the attention of the subject (especially visual attention), corresponding to the physical characteristics of the advertising stimuli, of the advertisement, such as colour, size or duration, and also elements of surprise (Nail 2007) related to *where* and *how* the advertisement appears. Its effect will also depend on subject-related factors (endogenous) related to the advertisement, such as motivation, predisposition, etc.

Another theoretical reference in studying attention is the work by Lachter, Forster and Ruthurk (2004). According to these authors, attention functions as a filter that can be directed from one source of stimulation to another and which is found at the information input. Before the attention stage and because of serious limitations in capacity, this filter analyses the physical characteristics of stimuli, which determine which stimulation will go on to a higher level of processing. NCA formats are therefore processed at this *pre-attentional* level.

Another cognitive process approach occurring in the processing of these NCA formats, and particularly with supers, is based on the flanker compatibility effect or FCE (Eriksen and Eriksen 1974). This effect shows how identifying an objective stimulus can be affected by other stimuli (called *flankers* or *distractors*). Attention does not seem to be an essential condition for this effect to occur since the FCE is still significant even if flankers are minimised or the subject is instructed to ignore them (Pedraja, Montoro and García-Sevilla 2010). According to this theory, non conventional advertising formats appear as *distractors* and, although the subject pays no attention to them, they will be processed in a similar way (automatically) as the FCE distractors; the level of processing will depend on the physical and/or category-based characteristics of the stimuli. This kind of advertising appears on the screen as a new element which the subject has no intention of paying attention to (Añaños, Mas and Estaún 2009), although this does not stop it from having a clear effect on attention (Pieters and Wedel 2007). Lachter, Forster and Ruthruff (2004) use the term *leakage* to describe the semantic processing of distractors while attention is placed on another part. If this scenario is transferred to TV audiovisual content, we find that these formats *invade* the screen and attempt to catch (like a leak) the user's attention. So advertising supers, from an attentional point of view, can be explained in

the terms used by Lachter, Forster and Ruthruff (2004), who distinguish between two key concepts: *leakage* and *slippage*, which correspond to diverting the attention towards a non-salient stimulus, perhaps unintentionally. Other variables are involved in this processing that depend both on the format used for their presentation and the cognitive and individual characteristics of the subjects (Añaños et al 2010).

Looking at attention and advertising leads us to the concept of *visuality* or the capacity of a graphic composition and the elements that compose it to attract a subject's attention (Añaños et al 2009). Over the last decade, research has been aimed at the commercial applications of eye tracking technology to assess the attentional effectiveness of visual marketing (Pieters et al 2002). This is where neuromarketing appears as a modern discipline, a product of the coming together of neuroscience and marketing, whose aim is to incorporate knowledge of brain processes (neuroscience), in other words the cognitive and sensory responses or reactions of a consumer to different stimuli within advertising (the advertisement), into marketing and sales, applying the data and possibilities of so-called *brain science* (Dooley 2011); the aim of neuromarketing is to provide insight into the cognitive impact of advertising in order to improve the effectiveness of commercial actions. Regarding the subject of this article, visual attention is closely related to the sensory response of eye movement and *eye tracking* has shown itself to be a powerful technique for evaluation, as it examines the movement of the eyes and helps to study the amount of attention given to the visual elements of a stimulus and the order in which they are attended to (Pieters and Wedel 2007; Wedel and Pieters 2007), providing highly valuable information on the identification and categorisation of visual objects. Numerous studies have endorsed its usefulness, particularly notable being those by Altmann and Kamide (2009) and Brasel and Gips (2008). That is why, in this article, *eye tracking* is used to measure the visual impact of non conventional advertising.

In order to answer the question of whether this process affects all subjects the same, we need to consider the evolutionary aspects of visual attention. Theories are divided regarding the loss of cognitive skills due to ageing, as some show that the latency of eye fixation and visual tracking increases with age, while there is no evidence that the precision of eye movements decreases with age. Some studies reveal that fixation accuracy (related to the amplitude ratio of the fixation and target eccentricity) decreases with age, while others don't find any effect related to ageing. These authors specify that, although the gain in fluid tracking of eye movement is less in older than younger subjects, this difference is very small.

There is no significant evidence that eye movement accuracy changes significantly with age or that eye movements contribute significantly in psycho-physical decisions regarding the overall flow direction under near viewing conditions. Perhaps the age differences observed are rather caused by differences in perceiving movement than by differences in eye movement, as pointed out by Sharpe and Sylvester (1978).

## 2. Objective and hypothesis

The main aim of this study is to fill the gap in research regarding the effectiveness of non conventional advertising on television, studying and measuring objectively (eye tracker) to what extent viewers attend to this kind of advertising information, NCA, and the visual impact caused among young and older subjects. The general hypotheses proposed are as follows:

- Hypothesis 1. There are differences in the visual behaviour of the subject depending on the format studied. In other words, the characteristics of the format studied (super, split screen and morphing) determine the subject's visual behaviour.
- Hypothesis 2. There are differences between the visual behaviour of old and young subjects. These differences depend on the characteristics of the NCA format.

## 3. Methodology

### 3.1. Material

#### a) Stimuli

The stimuli are snippets of TV programmes in which the NCA formats studied appear. To select them, those NCA are analysed that appear on the channels of TV3, TVE, Cuatro and Antena 3 TV; specifically, the percentage occupation (in time) is analysed of the NCA formats of supers, split screens and morphing in the programming for two consecutive days (Wednesday and Thursday) during the afternoon (from 15.45 to 18.30) and evening (from 21.45 to 00.30). The selection is made based on the results obtained from an analysis of 50 hours' programming (see the complete study and findings in Añaños 2011), which show that Cuatro is, by far, the channel that uses the most non conventional advertising (11.56%), followed by Antena 3 TV (1.27%), TV3 (1.21%) and TVE (0.2%), and the one that has the most supers and split screens. It should be noted that it was difficult to select the stimuli due to the short duration of NCA and the problems in separating it, almost always, from other NCA appearing simultaneously (hybrid NCA).

The criteria used in selecting stimuli are whether they belong to the channel with most NCA presence, whether they cover

both prime time periods (afternoon and evening) and whether they correspond to different programmes. The stimuli selected are those of the Cuatro channel, specifically:

- Super (S): snippet from the programme *El Hormiguero* where an advertisement is supered for the *El País* sandwich maker.
- Split screen (SS): snippet from the programme *Fama* where an advertisement appears, dividing the screen, for a videogame that appears in the programme.
- Morphing (M): snippet from the programme *Medium* where an animation appears advertising the channel.

Table 1 summarises the characteristics of each stimulus and the NCA's duration and location on the screen.

Figures 1, 2 and 3 illustrate the segments of the (television) stimuli used where the NCA under study appears

#### b) Eye tracker

The eye tracker helps to study the subject's eye movements and paths while viewing the stimulus. The TOBII T60 model is used, based on infrared emission and reception with a non-intrusive system. It has a single 17" TFT screen integrating eye tracker technology that operates automatically. It does not have any other device that might alter the subject's attention and allows them to move naturally, as if they were in front of a conventional screen. Subjects only need to place themselves in front of the screen, wait for it to be calibrated (figures 4 and 5) and look at the images presented. Calibration is automatic and is carried out using an infrared camera. The eye tracker takes the following measurements:

- Fixation count (number of eye fixations in a specific area).
- Fixation length (length, in seconds, of eye fixations in a specific area).
- Time from fixation to click (time that passes from the appearance of the NCA format to the first fixation of gaze).

### 3.2. Subjects taking part

43 subjects took part in the study, divided into:

- 27 young subjects: 20 women and 7 men. University students aged between 18 and 25 (inclusive) who are not studying subjects related to advertising and public relations,

**Table 1. Stimulus characteristics (television fragments)**

Type of NCA	Programme	Advertising	TV snippet duration (seconds)	NCA duration (seconds)	NCA screen location
Super (S)	<i>El Hormiguero</i>	<i>El País</i> sandwich maker	40	9	Bottom
Split screen (SS)	<i>Fama</i>	Xbox-Warcraft	44	32	Bottom right
Morphing (M)	<i>Medium</i>	Advertising channel itself	37	13	Top left

Source: Author.

Figure 1. Television snippet where the super (S) appears



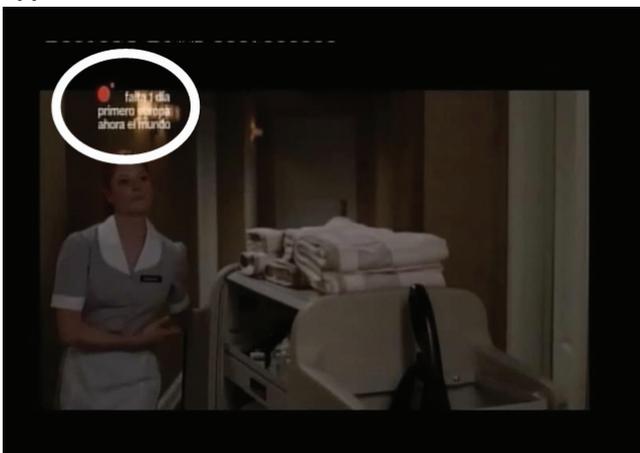
Source: Author.

Figure 2. Television snippet where the split screen (SS) appears



Source: Author.

Figure 3. Television snippet where the morphing (M) appears



Source: Author.

audiovisual communication, design, etc. so that their responses aren't conditioned by their knowledge.

- 16 old subjects: 10 women and 6 men, independent (in terms of their ability to get around), aged between 65 and 80, belonging to day centres for the elderly and who carry out some kind of activity that keeps them active.

The subjects came voluntarily to the laboratory where the experiment was held. Their eyesight is normal or corrected with lenses or glasses and they receive a certificate for having taken part in the research.

Of the initial participants, 38 finally took part in the experiment. Experimental mortality totalled 5 subjects (11.6% of the initial sample); the causes were the impossibility (2 subjects) of calibrating their gaze and therefore of obtaining the TOBI recording, and the loss (3 subjects) of recording data. Table 2 shows the initial and final breakdown of the sample.

### 3.3. Design

#### a) Stimuli

The stimuli are 3 television snippets (figures 1, 2 and 3). Each stimulus contains one of the NCA formats under study (table 1):

- Snippet 1: super (S)
- Snippet 2: morphing (M)
- Snippet 3: split screen (SS)

#### b) Variables

##### Dependent variables (DV)

Degree of attention given to the NCA formats under study (S, M and SS), measured by the eye tracker and based on the characteristics of the subject's eye fixations regarding each area of interest:

- Eye fixation on the area of interest.
- Fixation count (FC).
- Fixation length (FL).
- Time from fixation to click (TFF).

##### Independent variables (IV)

- Type or format of non conventional advertising: super (S), morphing (M) and split screen (SS).
- Age of participants: young and old.
- Gender of participants: male and female.

#### c) Experiment design

All subjects experienced the same experimental situation and the same stimulus conditions (S, M and SS). The stimuli were presented randomly. The design used is an exploratory study with a block design (individual) and random assignation of the possible treatment sequences (advertising stimuli).

### 3.4. Procedure

The experiment was carried out individually with each participant. The phases followed in the procedure were:

- Phase 1: welcome, explanation and consent of participants.

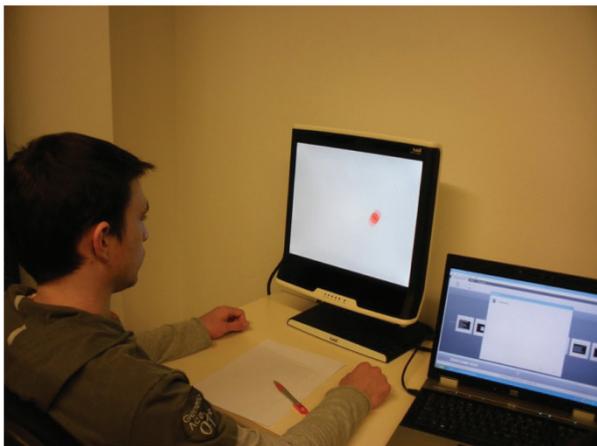
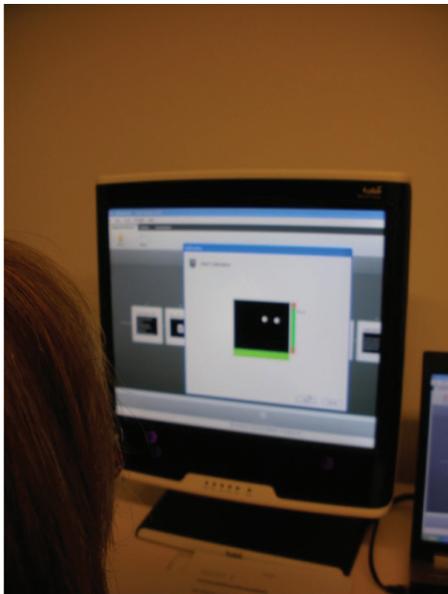
**Table 2. Initial and final breakdown of the subjects taking part in the experimental stage**

	Initial subjects			Final subjects		
	Women	Men	Total	Women	Men	Final*
<b>Young</b>	20	7	27	18	7	25
<b>Old</b>	10	6	16	9	4	13
<b>Total</b>	30	12	43*	27	11	38*

\* Experimental mortality totalled 5 subjects: 11.6% of the initial sample.

Source: Author.

**Figures 4 and 5. Calibrating the subject's gaze with the eye tracker**



Source: Author.

- Phase 2: calibrating the eye tracker, presenting stimuli and recording the subject's visual behaviour. The calibration of recordings ensures that the subject's gaze is correct, i.e. that it will contain a minimum of 90% of the visual records (figures 4 and 5); for the calibration, the subject must follow with his or her eyes, and without moving the head, a red point that is moving (randomly) on the screen.

Once the gaze has been calibrated, the validity of the subject is confirmed to gather data, the stimuli are presented and the eye tracker data gathered. The subject is told "Now you will have to look at the images as if you were watching television".

**4. Results**

To analyse the findings of the subject's visual behaviour on a specific zone of the screen for each of the segments presented, areas of interest (AOIs) are selected and created with the eye tracker. In each stimulus, the AOIs are those zones on the screen that capture most eye fixations, or the areas or zones on the screen where it is useful to measure eye fixations. After analysing, with the eye tracker, the creation of automatic AOIs to visualise hot spots (greatest eye fixation), the AOIs selected for each stimulus (super, split screen and morphing) correspond to the space (area) they occupy on the screen during the segment where the NCA formats appear (figures 1, 2 and 3).

**4.1. Fixing gaze on each NCA format and in each group studied**

This analysis shows whether the subjects' gaze has been fixed on each of the NCA formats during the presentation of each stimulus. The results are obtained by analysing the percentage of subjects with eye fixations on each AOI. Graph 1 shows the results obtained with young and old subjects.

Graph 1 shows how all the subjects have eye fixations with the split screen and most with the super. The findings for morphing are different, as 92% of the young subjects fixed their eyes on this format while only 77% of the old subjects did so; this means that the eyes of 23% of the old subjects did not fix on the morphing at any time.

**4.2. Analysis of the fixation count (FC) on each NCA format under study**

This analysis is carried out by comparing the median (Kruskal-Wallis Test) fixation count (FC) on each area of interest for each NCA format under study. The results obtained can be seen in graph 2.

The results (graph 2) show that there is no statistically significant difference between the young and old subjects in the median FCs in any format. An individual analysis of each format shows that the median FC for the older group is slightly higher with supers and split screen and a bit lower in morphing. In general, the split screen FCs are higher than those for the other formats.

Figures 6, 7 and 8 show, based on the heat maps produced with eye tracker, the FC groupings in the AOIs studied for all subjects during the presentation of each stimulus (snippet of television programme). The darker areas indicate where the eye fixations are more concentrated. These heat maps show, in relation to each NCA format, the following characteristics:

- Super: eye fixations are concentrated on the faces of char-

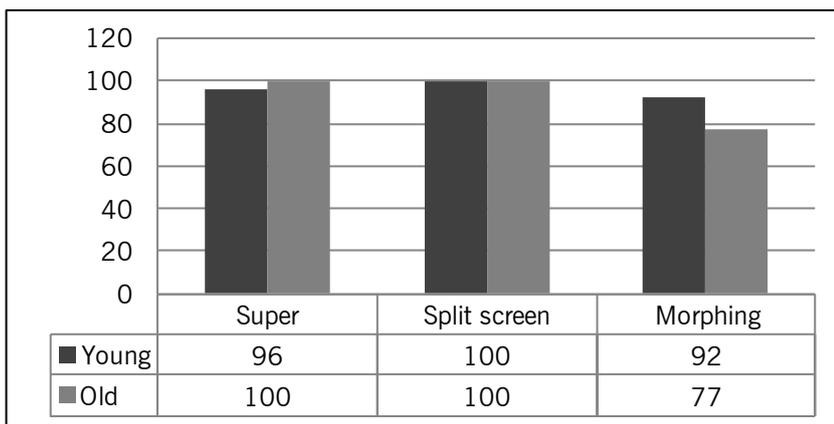
acters and on the super, confirming the existence of eye fixations on this non conventional advertising format.

- Split screen: eye fixations are concentrated mostly on the zone of the screen where the advertising appears, although there are also eye fixations on the zone where the programme is still being broadcast.
- Morphing: eye fixations are concentrated on the programming, although there are also eye fixations on the morphing which appears at the top left of the screen.

Graph 3 shows the results obtained from the young group, where we can see that the number of FCs for the super is statistically significant ( $p=.04$ ) and higher for women than men, the same as with the morphing format ( $p=.02$ ). In the older group of subjects, no statistically significant differences have been found between men and women.

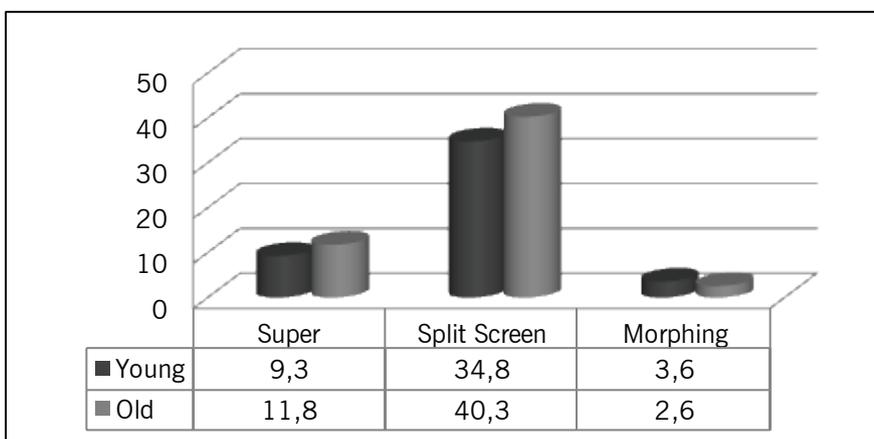
Figures 9 and 10 show, using the heat maps produced by the eye tracker, the grouping of FCs in the AOIs where statistically significant differences have been found between young

**Graph 1. Percentage of subjects with eye fixations on the NCA formats**

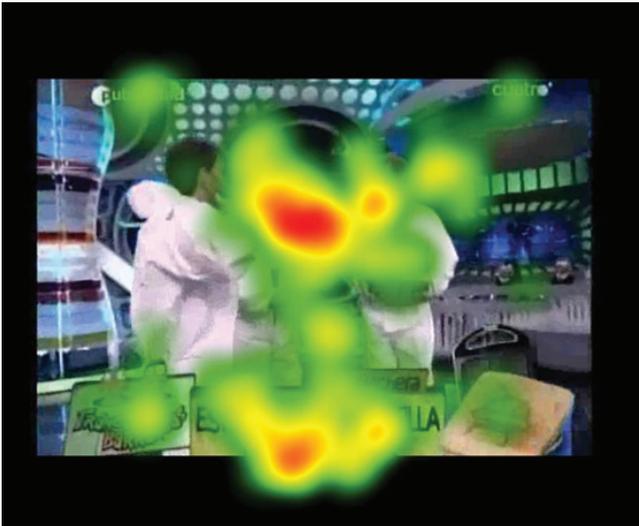


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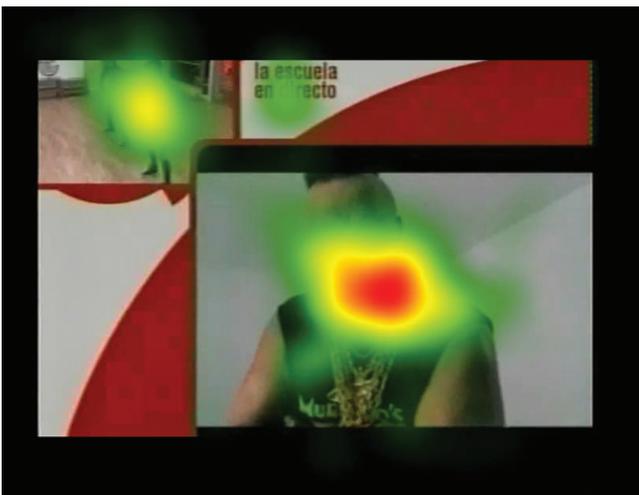
**Graph 2. Median fixation count for each age group**



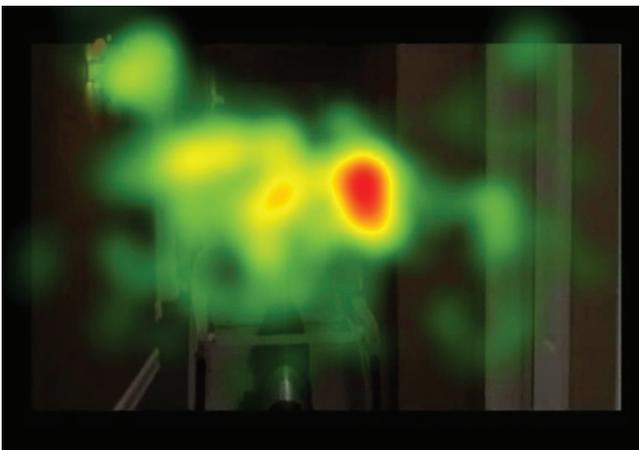
Source: Author.

**Figure 6.** Heat map of the stimulus containing the super

Source: Author.

**Figure 7.** Heat map of the stimulus containing the split screen

Source: Author.

**Figure 8.** Heat map of the stimulus containing the morphing

Source: Author.

men and women. Figure 9 (super) shows how the eye fixations of young women (darker zones) are located at the bottom of the screen, where the super NCA appears. Figure 10 (morphing) shows how there is some concentration of young women's eye fixations on the zone where the morphing appears (darker area at the top left of the screen).

#### 4.3. Analysis of the fixation length (FL) in each NCA format

This analysis is carried out by comparing the median (Kruskal-Wallis Test) duration in seconds of the FLs in each area of interest for each NCA format and each age group. The results (graph 4) show no statistically significant difference between the young and old groups in the FL for the super or morphing, while there is a statistically significant difference ( $p < .02$ ) for the split screen FLs, where the fixation length for young people is higher than that for the older subjects. No statistically significant differences have been found between men and women in the age groups studied.

#### 4.4. Analysis of the time from fixation to click of the NCA format (TFF)

This analysis (TFF) is carried out by comparing the median (Kruskal-Wallis Test) time in seconds taken for the subjects' gaze to fix for the first time on the NCA format from the time it appears on the screen.

The results (graph 5) show differences in the visual behaviour for the three formats. The split screen TFF is zero, as it invades the subject's vision by its very nature, without giving the option to look anywhere else and without there being any prior stimulus to "distract" the subject. There is a big difference between the TFF of the super and the morphing, as the TFF is very low for the super and much higher for the morphing.

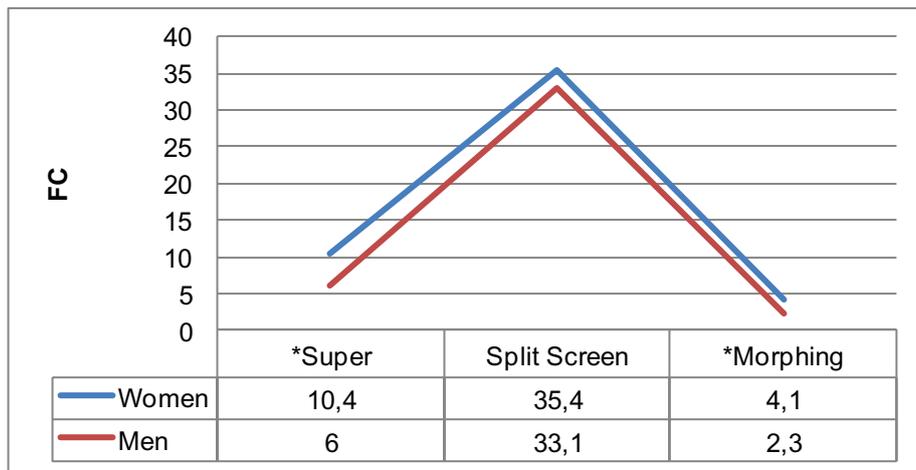
There are no statistically significant differences between the age groups; older subjects have a higher TFF than the younger subjects, indicating that their gaze tends to be slower than that of young people. No statistically significant difference has been found between the TFFs for men and those for women in the groups studied. However, within the young group, the TFF times are lower for the women than for the men (graph 6).

## 5. Conclusions

In justifying this work, the following question is asked: to what extent do these types of NCA format capture the attention of the viewer? We can conclude that practically all the subjects' gazes are fixed onto the super and split screen, while the young subjects fix their gaze on the morphing but a quarter of the older subjects don't.

Regarding the hypotheses proposed, we can conclude that a subject's visual behaviour depends more on the characteristics

Graph 3. Median eye fixations men-women (young group)



\* Statistically significant differences.

Source: Author.

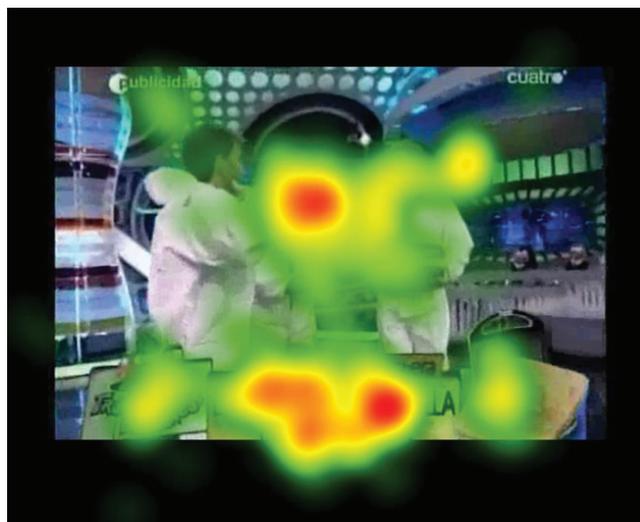
of the NCA format than on age. The number of eye fixations is distributed similarly among young and old subjects, but differs according to the NCA format. Split screen, which is more invasive and with more presence (visual and auditory) on the screen, is the format with the most eye fixations, followed by the super; morphing, a less invasive format on the screen, has the least eye fixations. Regarding the concentration of eye fixations, the heat maps show clear concentrations on the super and split screen, higher among young women, while when the morphing appears, the eye fixations concentrate more on the programme, showing that this advertising format has a lower capacity to capture attention.

With regard to how long the fixations last, the super and morphing show no difference between young and older subjects; split screen, however, does, in the sense that young people dedicate more time to looking at the split screen than older people.

An analysis of the time taken before the first eye fixation on the NCA as from when it appears shows big differences between the NCA formats: the *reaction* time is immediate with split screen and very short with supers, while it is much longer with morphing, both for young people and older. The results allow us to conclude that young women are slightly faster in detecting the *distractors* (NCA) presented than young men.

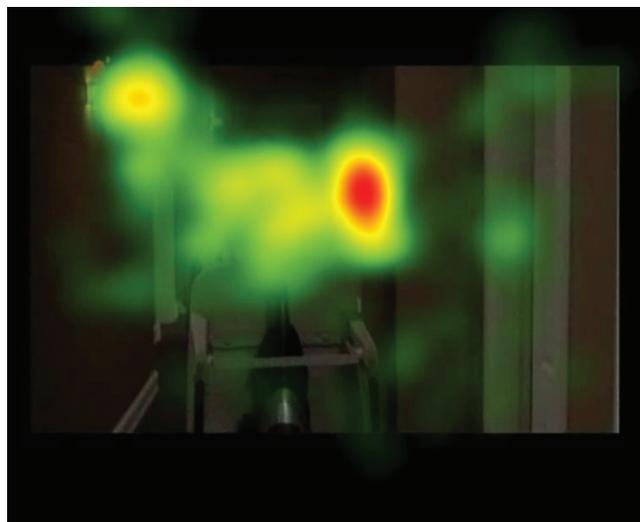
But is this kind of NCA really effective? The results support Broadbent's *selective filter theory* insofar as a *pre-attentional* analysis occurs (in this case, of the NCA formats) via which those stimuli are chosen that will go on to a higher processing level and those that will be ignored. We believe NCA to be a kind of *distractor*: when processing, the human cognitive system (of the viewer) processes TV information selectively but has conflicts at an attentional level when a new element (NCA) interferes in the process and diverts attention towards this new stimulus, which will be processed unconsciously (*pre-attentional*). These results are along the lines described by Privado, Botella and Colom (2010) as a *cognitive conflict*.

Figure 9. Heat map of the stimulus containing the super in young women



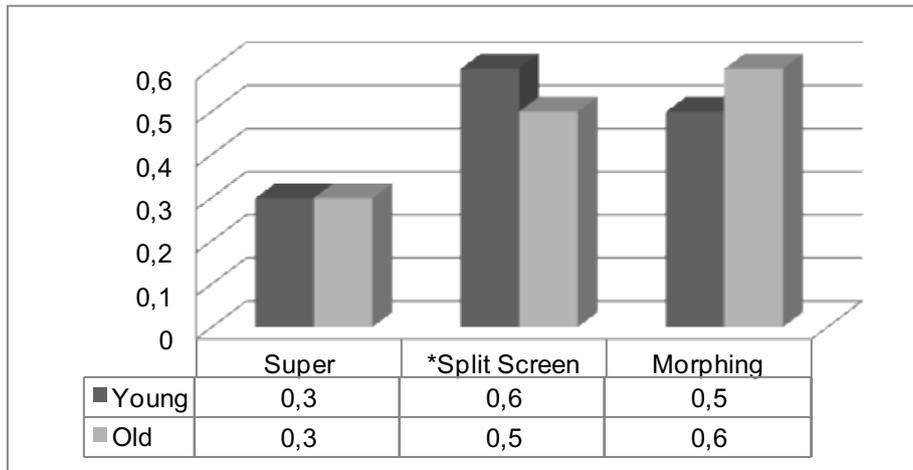
Source: Author.

Figure 10. Heat map of the stimulus containing the morphing in young women



Source: Author.

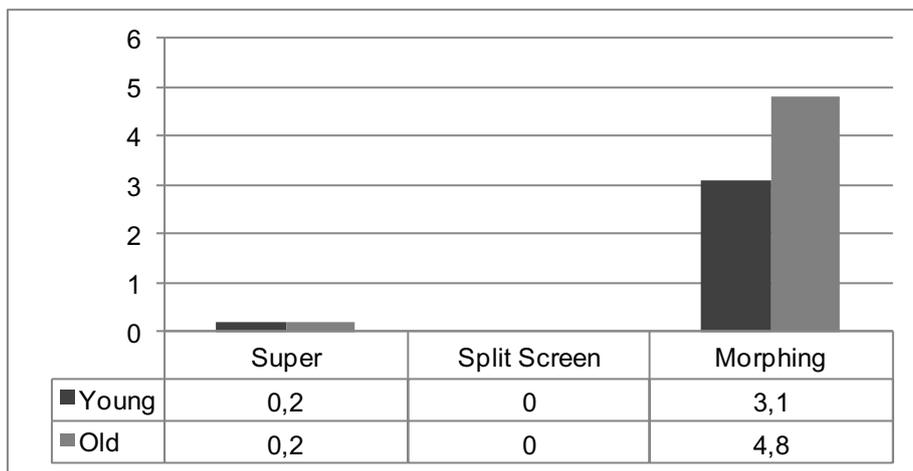
**Graph 4. Median fixation length (in seconds)**



\* Statistically significant difference ( $p < .02$ )

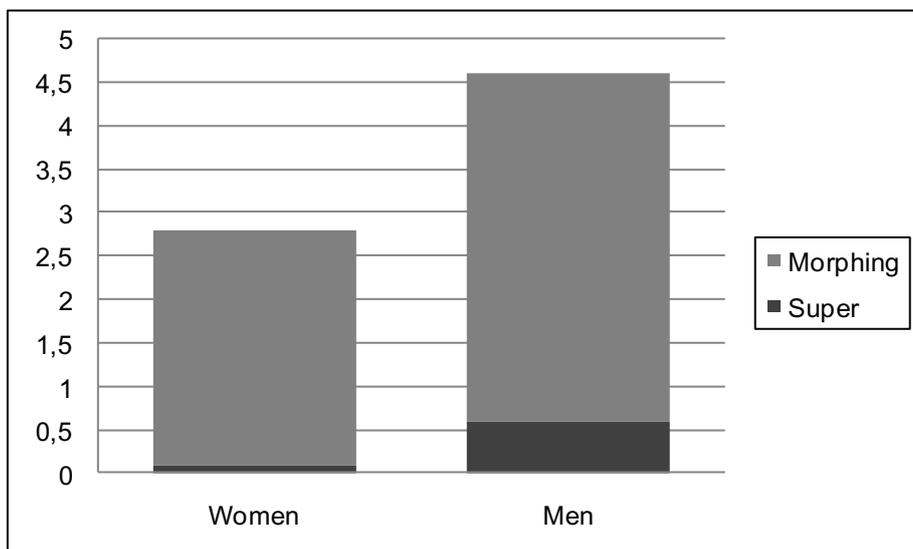
Source: Author.

**Graph 5. Median TFF of the NCA format (in seconds)**



Source: Author.

**Graph 6. TFF men-women (young group)**



Source: Author.

We believe that, in general, using these advertising formats is effective and that, when they are processed, the *emotional engagement model* (Heath 2009) is followed, according to which TV advertising is capable of generating a high engagement level although it may be paid a low level of attention.

As a final conclusion, we believe that the appearance of the NCA formats studied produces a visual impact on TV viewers determined by the characteristics of the formats rather than by the age of the subjects. These formats, although they appear as *distractors*, are processed more or less automatically and capture the subject's (unconscious) attention and therefore influence his or her behaviour.

### Final note

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Anna Valli and Anna Astals have collaborated in this work. The experiment (*eye tracker*) was carried out at the Laboratori de Tecnologies per a la Traducció Audiovisual (LAB-TTAV) of the Universitat Autònoma de Barcelona.

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