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# The Power of Direct Context As Revealed by Eye Tracking

## A Model Tracks Relative Attention To Competing Editorial and Promotional Content

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Many previous studies on attention have ignored the eye-catching potential of “direct context”—the entire promotional and editorial content an observer can view at the same time—in print media. In the current study, characteristics of 183 magazine advertisements and their direct context were coded systematically and linked to eye-tracking data, producing more than 19,000 observations. Expanding on earlier research, the authors focused on fixations within an advertisement during the first five seconds and attention paid to the combined main elements of an advertisement. Results showed that direct context diverted visual attention, especially when featuring multiple colors and large amounts of text.

**INTRODUCTION**

Attention has become one of the scarcest resources in the contemporary advertising economy (Dav-enport and Beck, 2001). Clutter is high; advertisements must compete with the content and context—editorial and promotional—surrounding them. For the purposes of the current study, which

focuses on print media, the authors narrowed the meaning of context to “direct context”: the entire content an observer can view at the same time he or she views an advertisement. The reader, for example, may view two pages simultaneously—an article about wine on the left page of a magazine spread and an advertisement about color printing

### Management Slant

- Direct context in magazines influences attention paid to advertisement elements.
- The effects of both the use of colors and of a large amount of text in the direct context is notable.
- The most effective position for an advertisement is on the right-hand page, next to an article or illustration without too many colors.
- Although the top of the page traditionally has been regarded as the most effective placement for an advertisement, the current study showed the opposite: Eye fixations were drawn to the bottom of the page.
- Managers should consider these factors when pre-testing advertisements in a two-page setting and purchasing advertisement space.

on the right. Would the wine article receive all the attention? Or would some elements in the advertisement be strong enough to engage the reader?

The current study examined the role of direct context in the competition for attention to magazine advertising. Previous research mainly has focused on attention to the elements of the advertisement; the current research expands on this by investigating the fuller context in which an advertisement appears that may divert attention away from the advertisement.

The current research started in 2009, when the authors began building a database of eye-tracking tests conducted between 2002 and 2009 by the research firm, GfK in the Netherlands (Boerman, Smit, and Van Meurs, 2010, 2011a, 2011b, 2011c). The eye-tracking data helped the authors explore what elements of the direct context of print advertisements were most arresting. They believe that this approach of integrating context in the study of visual attention may contribute to understanding why some advertisements are better than others at drawing a reader's attention.

In the current work, the definition of "attention" depends on

- the level of processing that is taken into account (*e.g.*, Finn, 1988; Greenwald and Leavitt, 1984; Smit, Neijens, and Heath, 2013) and
- the measurement that is used (*e.g.*, Appel, 1987, 1993; Smit and Neijens, 2011).

The authors of the current study focused on visual attention as stimulus-based low-level processing measured by eye tracking. The authors invoked an earlier perspective on visual attention as "the selective use of information from one region of the visual field at the expense of other regions of the visual field" (Henderson, 1992, p. 260). Eye-tracking

measurement has provided reliable information regarding attention to advertisements (*e.g.*, Pieters and Wedel, 2004; Wedel and Pieters, 2000). Scholars have concluded that people attend to what the eye is fixated on (Fox *et al.*, 1998; Hyönä, 2010; Styles, 2006).

## LITERATURE REVIEW

The authors of the current paper believe that scholarly work confirming the general effect of magazine context on advertisement attention is limited. Among the empirical findings is the notion that congruence between an entire magazine and an advertisement may have increased ad recognition (Moorman, Neijens, and Smit, 2002), yet lower levels of recall and recognition have been found when readers were more involved with a magazine (Norris and Colman, 1992).

These studies on the involvement of entire magazines did not incorporate the direct observable context. In a magazine, direct context refers to the two pages one can view at the same time. This direct context is the primary focus of the current study and has hardly been part of earlier research.

### Using "Vote Count" to Analyze Related Research

Although not widely accepted among academics as a valid method of analysis, a "vote-count" procedure in a case such as the current study may help analyze limited findings on a particular research topic. In a vote-count procedure, reported relationships in earlier research are categorized in terms of "positive," "negative," and "non-significant" effects. Such a categorization is preferable over a statistical "effect-size" procedure when the number of comparable studies is low or when insufficient information is provided on sample-sized, raw data, and means scores (Bushman, 1994; Eisend, 2009).

In the current study, 26 published empirical studies were analyzed via the vote-count procedure. From that analysis, the authors categorized characteristics of print advertisements and direct context in magazines in terms of their relationship with consumers' attention to advertising.

The 26 studies were selected by means of a keyword and reference search in several databases (EBSCO, Communication & Mass Media Complete, PsycINFO, Sociological abstracts, Online Contents, Web of science, and Google Scholar). The following (combinations of) keywords were used:

- (visual) attention,
- advertising,
- ad(vertisement),
- eye movements,
- eye tracking,
- print,
- magazine, and
- context.

The reference search was conducted by addressing the references of the collected studies as they applied to different characteristics or independent variables. The 26 selected studies on attention to magazine advertising were published in peer-reviewed journals and edited volumes.

Among the 26 studies, 60 percent reported significant direct relationships between a print-advertisement characteristic and advertising attention (See Table 1). The different independent variables (characteristics) were combined in

- ten objective advertisement characteristics,
- eight subjective advertisement characteristics,
- four context characteristics, and
- two interaction variables.

The authors use the term "objective" to clarify that a characteristic (*i.e.*, size or

**TABLE 1**

Summary of Characteristics Related to Attention to Magazine Advertising

Characteristics	Effect <sup>a</sup>	Measurement <sup>b</sup>	References <sup>c</sup>
<b>Advertisement (Objective):</b>			
Ad size	Positive (7)	ET, RECO (S), REC	FIN88 FRA04 GRO91 HAN80 TWE52 VAL73 ZHA09
Pictorial size	Positive (5)	ET, RECO (S)	FIN88 FRA04 PIE10 ROS97 TWE52 VAL73
Body copy size	Positive (4), Negative (1)	ET, RECO (S)	FIN88 FRA04 PIE04 RAY01 ROS97
Packshot size	Positive (1)	ET	ROS97
Number of colors	Positive (6)	ET, RECO (S), REC	FIN88 GRO91 HAN80 VAL73 TWE52 ROS97
Pictorial/headline included	Positive (6)	ET, RECO (S)	HAN80 PIE04 RAY01 RAY08 ROS97 VAL73
Pictorial structure (unframed)	Negative (1)	REC	EDE83
Pictorial position	Left (1), right (2), upper half (1)	ET	KRO80 RAY01 ROS97
Body copy position	Upper left (1), left (1), right (1)	ET	KRO80 RAY01 ROS97
Packshot position	Right (1)	ET	ROS97
<b>Advertisement (Subjective):</b>			
Famous endorser	Positive (1)	RECO, REC	PET83
Direct comparative claims	Positive (1)	REC	PEC90
Foreign language	Positive (1)	RECO, REC	AHN08
Homosexual imagery	Positive (1)	RECO, REC, T	ANG10
Humor (types)	Positive (2), but varies per type	RECO (S)	MAD82 SPO97
Ad originality	Positive (2)	ET, REC	KRO84 PIE02
Information benefits	Negative (5)	ET, RECO (S), REC	FIN88 FRA04 HAN80 RAD03 VAL73
Design complexity	Positive (1)	ET	PIE10
<b>Context:</b>			
Page of tested ad	Left (2), Right (2)	RECO (S), REC	FIN88 WED00
Position within the magazine	Front more than back (2)	RECO (S)	FIN88 HAN80
Unrelated topic in context	Less distracting (2)	RECO, REC	DEPO2 MAL96
Other ad(s) on same page and facing page	Less attention to tested ad when there are more or bigger ad(s) (2)	ET, REC	ZHA09
<b>Interaction:</b>			
Ad/brand familiarity	Varies	ET, REC	PIE02 PIE04 PIE10
Product category	Varies	ET, RECO (S)	FRA04 GRO91 HAN80

<sup>a</sup>Effect is shown as it was tested; the number of significant relationships is shown in brackets. <sup>b</sup>Attention measurement by eye tracking (ET), time spent in seconds (T), recognition (RECO), Starch's noted scores (S) and recall (REC). <sup>c</sup>References are abbreviated, according to the first three letters of first author and last two digits of the year (See \* in the Reference list).

**How to read this table:**

Ex. Row 2: Five studies showed a positive relationship ("Positive [5]") between the size of the included pictorial ("pictorial size") and attention, which was measured by eye tracking ("ET") or Starch recognition scores ("RECO [S]"), published in [FIN88] (= Finn, 1988) and [PIE04] (= Pieters and Wedel, 2004). See References section on page 226 for deciphering abbreviated citations.

The references of the studies considered in the current authors' vote count are included in the Reference list (See page 226) with \* and refer to Table 1, with the first three letters of the first author and the last two digits of the year, for example, [ZHA09] means Zhang, Wedel, and Pieters (2009).

position) did not depend on the interpretation of the coder. By “subjective,” the authors meant that a characteristic was dependent on interpretation—for instance, if a particular item was referred to as “humorous” or “famous.” In other words, coders possibly disagreed on characteristics that could be described as subjective. In the development of their own coding scheme, the authors, therefore, focused on objective characteristics (See Methodology).

### Assessing the Measures

The eye-tracking measures in the published studies consisted of the number of fixations, fixation duration, viewing time or gaze duration, and viewing pattern. The authors also found scenarios in which attention was measured by memory measures, such as

- recognition,
- time spent in seconds, and
- recall.

In the current study, “memory measures” and “eye tracking” refer to different levels of attention and processing (Finn, 1988; Greenwald and Leavitt, 1984; Smit *et al.*, 2013). Whereas memory measures are indicators of active attention and high-level processing, eye tracking identifies passive attention or stimulus-based low-level processing. Because active attention and processing can occur only after passive attention has been established, these measures are necessarily related (Kahneman, 2011). The current authors, therefore, included these additional memory studies in their vote count.

### Advertising Factors Observed in The Literature

Generally, more studies were conducted on magazine advertisements without considering their context than on advertisements

including their context (See Table 1). Several well-known objective advertising factors have been observed to influence attention, most notably size (with the finding that “bigger is better”) and the use of multiple colors (*e.g.*, Pieters and Wedel, 2004; Pieters, Wedel, and Batra, 2010; Zhang, Wedel, and Pieters, 2009).

The effect of color is not as straightforward as that of size, but it often has proved to have a positive effect on attention (*e.g.*, Grønhaug, Kvitastein, and Grønmo, 1991).

In addition to size and color, the position of advertisement elements has been observed to attract attention. Although the right half of an advertisement is the best position for product shots, pictorials, headlines, and body copy (Rosbergen, Pieters, and Wedel, 1997), pictorials and text are best positioned on the left half of an advertisement (Kroeber-Riel and Barton, 1980). Moreover, pictorials and text in the upper half of an advertisement have been observed to attract more attention than pictorials and text in the lower half (Kroeber-Riel and Barton, 1980).

Different relationships between direct context and attention (DePelsmacker, Geuens, and Anckaert, 2002; Finn, 1988; Hanssens and Weitz, 1980; Malaviya, Kisielius, and Sternthal, 1996; Wedel and Pieters, 2000; Zhang *et al.*, 2009) have shown that

- magazine page placement matters; a page on the right of a (two-page) spread attracts more attention than on the left;
- pages at the beginning of a magazine receive more attention than pages at the end; and
- placement on the page in relation to other advertisements matters: Specifically, facing another advertisement or facing multiple advertisements is less distracting (from the advertiser’s point of view) than placement opposite editorial content, especially when the context

is not related to the advertisement (See Table 1).

### RESEARCH QUESTION

In summary, previous scholarly work has found that at least the following factors should be taken into account when studying attention to magazine advertising:

- page number (place in the magazine and right versus left page);
- type of context (other advertisements and/or editorial content);
- size of the advertisement;
- position of the advertisement; and
- use of color.

The current authors focused on these objective characteristics and not on other more subjective characteristics (*e.g.*, “humor,” “originality”) in developing their coding scheme.

To understand the attracting and distracting power of the direct magazine context, the current authors asked

RQ1: How much visual attention is paid to the different elements of the advertisement and its direct magazine context?

### METHODOLOGY

#### Materials

The current researchers measured eye movements using the Tobii Eyetracker, a device that estimates the point of gaze using image sensor technology that monitors the eyes and calculates the point of gaze.

Generally, eye tracking provides rich data about gaze behavior more accurately than questionnaires do and cannot be easily manipulated by the study participant (Duchowski, 2003; Holmqvist *et al.*, 2011; Schrammel *et al.*, 2011). The Tobii Eyetracker is similar to the device used in other parts of the literature (Pieters and Wedel, 2004, 2010). One advantage

**The current authors focused on these objective characteristics and not on other more subjective characteristics.**

of the Tobii Eyetracker is that invisible near-infrared illuminators make this eye-tracking device unobtrusive; participants do not have to look at the stimuli through a glass sheet (Wedel and Pieters, 2000) and are not wearing an apparatus on their head (Kroeber-Riel, 1984; Kroeber-Riel and Barton, 1980; Rayner, Rotello, and Stewart, 2001; Rayner, Miller, and Rotello, 2008).

For the current study, the Netherlands office of GfK conducted a series of eye-tracking tests over a seven-year period (2002 to 2009). As participants were asked to read a magazine on a computer screen, their eye movements were recorded. The dataset of eye-tracking measurements used in this study consisted of 183 magazine advertisements plus their direct context. Each year of measurement was included in the analysis to control for a possible increase or decrease in attention over the years.

The types of magazines included

- general consumer (66.5 percent);
- medical journals (24.8 percent); and
- management magazines (8.7 percent).

Most of the advertisements (154) covered one full page. The others were placed as follows:

- Four covered half a page;
- Three were smaller than half a page; and
- 22 were spreads covering two full pages.

The 22 spreads were excluded from the analyses because they did not have a direct context.

The most common product categories in the dataset were

- medicines (21.7 percent);
- food and non-alcoholic drinks (15.5 percent);
- insurance (10.6 percent);
- consumer electronics (8.1 percent); and
- clothing and shoes (8.1 percent).

The magazine types did not differ in terms of visual attention ( $F(2, 156) = 0.002, p = 0.998$ ;  $F(2, 146) = 0.64, p = 0.53$ ) nor did product type ( $F(5, 153) = 1.53, p = 0.185$ ;  $F(5, 143) = 1.01, p = 0.414$ ).

**Participants**

The average number of participants per study was 105 (min = 60, max = 273). A full 68 tests were conducted with, on average, 2.7 advertisements per test. The total number of observations was 19,278.

In terms of gender and age, the respondents were distributed evenly, in terms of gender and age, among four groups in each eye-tracking test:

- men between the ages of 18 and 39 years;
- women ages 18 to 39;
- men ages 40 to 65; and
- women ages 40 to 65.

**Procedure**

Respondents were placed in front of the eye tracker and asked to read the full magazine as they would at home. During this exposure to the magazine, eye movements and fixations were recorded. There was no time limit; participants could take as long as they wanted to read the magazine. By clicking on a button, they could move back and forth within the magazine. Because they were asked to read only the

magazine, participants were not primed to focus on the advertisements.

**Dependent Variable:**

**Visual Attention**

Visual attention was measured by means of fixations within the magazine content. The eye-tracking scores were linked to different regions of the advertisements, the so-called four “Areas of Interest” (Pieters and Wedel, 2010; See Figure 1):

- advertisement (a);
- brand (b);
- pictorial (p); and
- text (t).

Two different eye-tracking scores were added to the advertisement database:

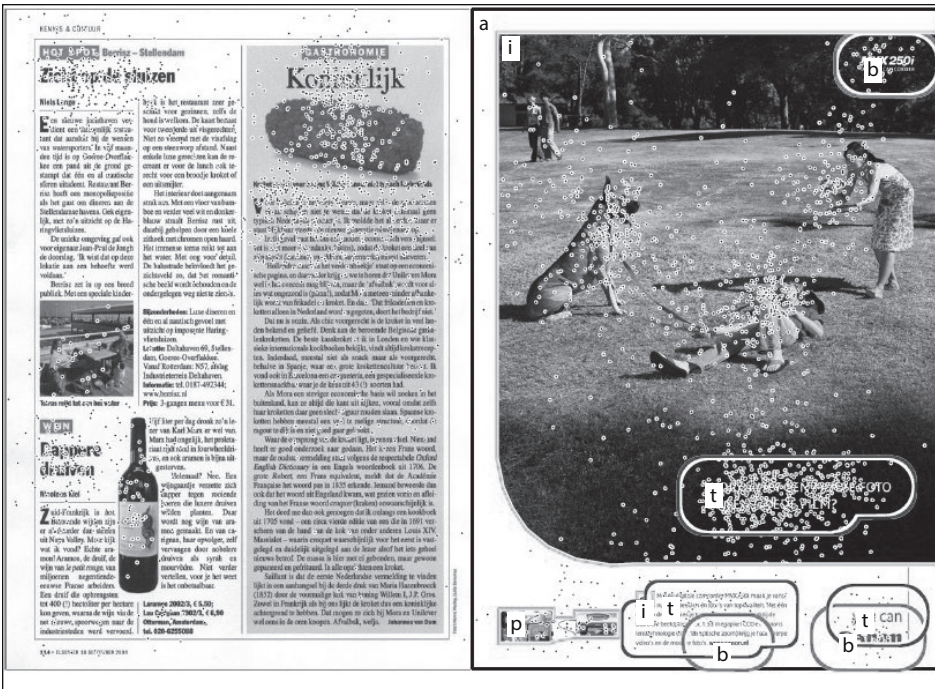
- fixations within an advertisement during the first five seconds of viewing (Area of Interest [a], called “Ad Score”) and
- fixations on three main advertisement elements (Areas of Interest [b], [p] and [t], called “Three-Element Score”).

A “fixation” is defined as “the state in which the eye remains in one specific point for at least 0.1 second.”

The current researchers thus had two measures of visual attention:

- Ad Score is the percentage of all fixations within an advertisement during the first five seconds of viewing. These fixations were measured at the respondent level per advertisement but analyzed on an aggregated level (*i.e.*, the average percentage of fixations within an advertisement during the first 5 seconds of viewing).

For example, if all respondents were to hold their eyes exclusively on an advertisement for the full five seconds, the Ad Score would be 100. Hence, the less attention paid within the first five



**Figure 1** Example of a Coded Advertisement

Direct context on left page, full-page ad on right page. Fixations as measured by eye-tracking data, used in permission of GfK: Black Area of Interest (AOI): the ad (a); red AOI: brand elements (b); green AOI: pictorial elements (p); and blue AOI: text elements (t).

seconds of viewing, the lower the Ad Score became. This score thus enabled the researchers to classify how well an advertisement was able to attract attention. In this study, advertisements attracted, on average, 45 percent of all fixations during the first five seconds of viewing ( $M = 44.67$ ;  $SD = 15.17$ ; Range = 16–90; Skewness = 0.73; Kurtosis = -0.16).

- Three-Element Score is an index of the visual attention paid to the three main elements of an advertisement measured by the percentage of respondents that fixated at least once on at least parts of the brand and the pictorial imagery in the advertising and the accompanying text. The advertisements in this study had an average Three-Element Score of 34 percent ( $M = 34.20$ ,  $SD = 17.74$ ; Range = 1–75; Skewness = 0.25; Kurtosis = -0.65).

Both attention measures are based on fixations, consistent with the prior eye-tracking research considered in the current study’s vote-count analysis (Pieter and Wedel, 2004, 2007, 2010; Rosbergen *et al.*, 1997).

Contrary to prior studies, however, the current research did not focus on the fixation frequency or duration; instead, it used the percentage of fixations that were inside the advertisement within the first five seconds. This provided information about the attracting power of the advertisement and the possible distracting power of the context, as it also took into account all attention that was not inside the advertisement.

Additionally, although earlier research did take into account the brand, text, and pictorial elements (e.g., Pieter and Wedel, 2004, 2007, 2010; Rosbergen *et al.*, 1997), those studies did not focus on the combination of these three elements. In contrast, the authors of the current study believes

the new combination metrics provide an important contribution to earlier eye-tracking research.

**Independent Variables: Characteristics and Coding**

The context and advertisement characteristics scores were determined by content analysis using a coding scheme featuring 50 questions divided into five categories:

- advertisement,
- brand,
- pictorial elements,
- text elements, and
- direct context (See Table 2).

Most of the coding was based on previous research examining product, size, color, position, content, and headline (See references in Table 1). Some coding was added: Specifically, the current authors found it interesting to know what brand was advertised and to code some specifics related to the eye-tracking measures (AOI, distance between elements, and text).

The coding scheme was pre-tested and discussed in advance with five experts—three from a publishing house and two from an advertising agency. Four graduate students were trained by one of the authors to code all 183 advertisements. The authors selected a random 20 percent sample of their material and had it coded double (that is, two times) to test inter-coder reliability (Neuendorf, 2002; Wimmer and Dominick, 1997; See Table 2). The overall inter-coder reliability was good (0.88); in other words, the coding was deemed reliable (See Appendix).<sup>1</sup>

<sup>1</sup> For the specific variables and their inter-coder reliability scores, please see the article’s Appendix online at <http://warc.me/ACPI5g>. Cohen’s Kappa was used for nominal and ordinal variables. Intra-class correlation was used for interval variables. Inter-coder reliability ranged between 0.43 and 1.00

When two coders disagreed on an instance of coding, one of the authors made the final decision by examining the material and choosing what he or she considered the best option. An online survey tool was used to enter the data of the content analysis (as if the coding scheme were a questionnaire). These data form the basis of the data file (supported by SPSS software) with advertisements as cases.

The digital versions of the advertisements and their context were uploaded into *ImageMagick* to calculate the JPEG properties with respect to the amount of red, green, and blue and the number of colors in the advertisement and the direct context. These data were added to the data file.

**Analysis**

The SPSS analysis (IBM Statistical Package for the Social Sciences software) comprised several steps:

- Several variables were created from the content analysis, such as dummy variables for the ordinal variables;
- correlation analysis was conducted; and
- all significant bivariate relations from the previous step were combined into one final model for each dependent variable.

Some variables established in Step 2 were significantly correlated to only one of the two attention scores. In these cases, the variables still were included in both models to maintain comparability between models. Some independent variables in Step 2 were highly correlated. Of all pairs of variables with a correlation higher than 0.8, one was deleted to avoid multicollinearity.

The models were tested by linear regression analysis (method Enter). SPSS collinearity diagnostics showed no incidences of multicollinearity (tolerance above 0.20 and VIF below 5; see O'Brien, 2007).

**TABLE 2**  
Coded Independent Variables

Category	Variables	ICR (M)
Advertisement	Brand name (A1–2), Product (A3–5), Size (A6–8), Color (A9), Distance (A10–12)	0.93
Brand	Number of brand AOIs (B1), Brand size <sup>a</sup> (B2–3), Brand position <sup>a</sup> (B4–5), Color (B6)	0.82
Pictorial	Number of pictorial AOIs (P1), Content pictorial (P2), Color (P3), Size <sup>a</sup> (P4–5), Position <sup>a</sup> (P6–7)	0.87
Text	Number text AOIs (T1), Headline (T2-3), Headline size <sup>a</sup> (T4–5), Position Headline <sup>a</sup> (T6–7), Color headline (T8–9), Size body text <sup>a</sup> (T10–11), Position body text <sup>a</sup> (T12–13), Color body text (T14)	0.88
Direct Context	Position (C1–2), Other ads (C3–4), Color (C5), Content (C6–7, C10–11), Amount text (C10–11)	0.89

<sup>a</sup> Size and position of elements are corrected for ad size in the formula: (variable/ad surface) \* 1000;  
Notes: Overall intercoder reliability (ICR) = 0.88, see also Codebook in the Appendix; AOI = Area of Interest.

**RESULTS**

**Visual-Attention Models**

Two regression models were tested, one for each attention measure: Model 1 (Ad Score) and Model 2 (Three-Element Score; See Table 3).

Both models fit the data well, with an adjusted R<sup>2</sup> greater than 44 percent, indicating that advertisement and context characteristics were able to explain fixations during the first five seconds of viewing (Ad Score, Model 1) and combined fixations on the three main elements of the ad (Three-Element Score, Model 2).

**Advertisement Characteristics.** Overall, the models showed that, to a great extent, advertisement size (bigger was better) explained the variance in both visual attention scores, as did the number of colors in the advertisement (more colors resulted in more engagement) and the position of the pictorials (the lower the better; See Table 3). These results confirmed previous research (See references in Table 1) *except for position of the pictorial in the advertisement*. Although the top of the page traditionally has been regarded as the most effective placement for an advertisement

(Rosbergen *et al.*, 1997), the current study showed the opposite with regard to where readers' eyes tracked on the page. Eye fixations, in fact, were drawn to the bottom of the page.

**Context Characteristics.** Two of the context variables were notable:

- the color in the context (the eyes go to the context instead of to the advertisement when multiple colors are part of this context) and
- the page of the direct context (the eyes go to the context when the advertisement is placed on the left page and the context on the right page; see "Context Elements" and Table 3).

**Advertisement Elements**

Overall, advertisements measured by Ad Score, Model 1, attracted attention when the advertisements

- were large,
- contained many colors but not dominantly blue,
- offered a visual image pictorial at the bottom of the advertisement, and



**TABLE 3**  
Attracting and Distracting Effects

	<b>Model 1: Ad Score</b> <i>R</i> <sup>2</sup> = 0.52; Adj. <i>R</i> <sup>2</sup> = 0.44 <i>F</i> (19,113) = 6.44**		<b>Model 2: Three-Element Score</b> <i>R</i> <sup>2</sup> = 0.65; Adj. <i>R</i> <sup>2</sup> = 0.59 <i>F</i> (19,111) = 10.72**	
	<b><i>B</i>(se)</b>	<b>β</b>	<b><i>B</i>(se)</b>	<b>β</b>
<b>Advertisement</b>				
Size of ad	12.2 (3.13)	0.30**	23.56 (3.47)	0.46**
Pictorial surface area	-5.56 (3.21)	-0.14 <sup>(*)</sup>	5.56 (3.56)	0.11
Body copy surface area (text)	1.06 (2.56)	0.03	9.53 (2.85)	0.22**
Number of colors (JPEG)	0.82 (0.41)	0.16*	2.17 (0.45)	0.34**
Dominant color ad blue	-6.87 (2.33)	-0.21**	-4.02 (2.58)	-0.10
Dominant color background headline black	2.89 (3.15)	0.07	10.94 (3.49)	0.20**
Pictorial position (top = 0)	23.65 (7.02)	0.25**	20.28 (7.79)	0.18*
Body text position (left = 0)	0.53 (4.71)	0.01	9.44 (5.23)	0.11 <sup>(*)</sup>
Text–pictorial distance	-4.92 (3.33)	-0.13	-8.63 (3.70)	-0.18*
Pictorial is illustration + photo	9.73 (2.81)	0.24**	3.20 (3.12)	0.06
Headline included	4.21 (2.78)	0.11	13.44 (3.09)	0.28**
<b>Direct Context</b>				
Ad on left page	-5.02 (2.17)	-0.17*	-6.77 (2.41)	-0.18**
Content is science	-4.82 (2.55)	-0.15 <sup>(*)</sup>	-3.53 (2.83)	-0.09
Content is letters to the editor	0.28 (3.60)	0.01	5.79 (4.00)	0.10
Complete article	-2.22 (2.08)	-0.08	-0.06 (2.31)	-0.00
Amount of text	0.06 (0.04)	0.11	-0.14 (0.05)	-0.19**
Color in context	-14.31 (3.00)	-0.36**	-17.70 (3.33)	-0.34**
Red in context (JPEG)	0.00 (0.00)	0.00	-0.01 (0.00)	-0.13*
<b>Control variables</b>				
Year of eye tracking	0.61 (0.62)	0.08	0.86 (0.69)	0.09

\*\**p* < 0.01, \**p* < 0.05, <sup>(\*)</sup>*p* < 0.10; Collinearity statistics: Tolerance between 0.56 and 0.87, VIF between 1.15 and 1.63

- combined an illustration with a photo.

In measurements with the Three-Element Score, Model 2, larger advertisements also attracted more visual attention. Specifically,

- Not only the total advertisement size but also the size of the text within the advertisements mattered;
- multiple colors in the advertisements and the background color of the headline (black) attracted attention to the elements;

- a low position of the pictorial was shown to attract visual attention to the three elements; and
- attention to the elements increased when the distance between text and pictorials was not great and when a headline was included in an advertisement.

**Context Elements**

Several aspects of direct context were observed to engage readers and reduce the visual attention to the advertisement.

In particular, the use of color in the context and the page of the tested advertisement (left-hand pages attracted less attention than right-hand pages) reduced the overall number of fixations on the advertisements (Ad Score, Model 1).

The results of the second regression analysis for visual attention to the three main elements of the advertisements (Three-Element Score, Model 2) confirmed the distracting effects of color and pagination.

In addition, two factors were determined to influence combined fixation to the three elements, which were not observed for

the other visual attention measure. The amount of text in the direct context diminished the number of fixations on all three elements in the advertisements. In other words, text in the direct context reduced attention paid to the advertisement elements. In addition, the use of the color red in the direct context distracted overall fixation on the advertisements.

**Attracting versus Distracting**

Because editorial content and advertisements are created with different goals in mind, context and advertisement characteristics compete for the reader’s attention.

A magazine advertisement most likely is designed to draw attention away from editorial content and to the advertisement, whereas editorial content is not designed to divert attention from advertisements but to inform or entertain its readers.

To test the attracting potential of both context and advertisements, separate regression models were run for each group of characteristics:

- one including only the ad variable;
- one including only the direct context variables.

The adjusted  $R^2$  for each model showed how much of the variance in the eye-tracking score is explained by the advertisement variables and how much by the context variables. Because the adjusted  $R^2$  was corrected for the number of variables, the researchers could discern which group explained more of the variance in the eye-tracking scores, even though the number of predictors differed between groups.

The results showed that the advertisement variables explained twice as much of the variance in visual attention to the three elements than the context variables (Adjusted  $R^2$  Ad versus Context: 0.45 versus 0.18). For the other visual attention

score, this was not the case (Adjusted  $R^2$  Ad versus Context: 0.29 versus 0.23).

These results thus demonstrated that context potentially was a more powerful distractor for visual attention to the main elements of the advertisement (Three-Element Score) than for the more global visual attention to the advertisement during the first five seconds (Ad Score).

**DISCUSSION**

The current study sought to test which elements of the direct context of magazine advertisements catch the eye of the reader. Specifically,

RQ1: How much visual attention is paid to the different elements of the advertisement and its direct magazine context?

The results showed that, in some cases, several context characteristics such as size and position divert attention from advertisements. Overall, color in the context and the page of the context (right-hand versus left-hand page), in particular, distracted the reader from advertisements and to the three main elements:

- brand,
- pictorial, and
- text.

The Three-Element Score also was affected negatively by the amount of text in the context and a dominance of the color red in the context.

The comparison of the distracting potential of the direct context with the attracting potential of an advertisement showed two things:

- Direct context generally is a stronger distractor for visual attention when it concerns visual attention to the main elements of an advertisement; and

- this is not the case when it concerns visual attention during the first five seconds: During these first moments, direct context and advertisement compete equally strongly.

The authors believe their findings contribute to the literature in two key ways:

- The current study confirms the positive influence of some classic characteristics, such as advertisement size, position, and colors; and
- the results clearly indicate what factors can drive passive attention, referred to as “bottom-up factors” (Pieters, Warlop, and Wedel, 2002); this is a valuable extension of previous research on attention, which mainly focused on active attention and self-reported memory measures.

**LIMITATIONS AND FUTURE RESEARCH**

To incorporate as many advertisements as possible into this study, the authors did not have the opportunity to consider user-related characteristics. Thus, no “top-down factors” were included.

Previous research has shown that the following “top-down” characteristics could be relevant variables to incorporate in future attention studies:

- gender (Grønhaug *et al.*, 1991);
- user involvement (Petty, Cacioppo, and Schumann, 1983);
- familiarity (Pieters *et al.*, 2002); and
- the goal of the user (Radach *et al.*, 2003).

Further research should explore the relation between bottom-up and top-down factors and focus on more types of attention at the same time. This type of research calls for a combination of subconscious measurements, such as eye tracking, and such conscious measures as memory, attitude, and intention measures.

Despite its many advantages, eye tracking does have its constraints, especially concerning external validity. In particular, the experimental eye-tracking setup in which people read magazines must be taken into account. Although habits may change with the more common use of tablets, people usually do not read magazines on a screen. Moreover, in the experiment conducted in this study, participants were placed in front of a screen in an isolated research room where there were no distractions, a situation far removed from the usual living-room setting where people read at home.

Other eye-tracking studies have included measures such as the number of fixations, average number of fixations for each element, viewing patterns, and viewing times. The current study combined data from a large number of unique eye-tracking studies conducted over several years. To include as many studies as possible, the authors were able to include only eye-tracking scores that were available to all studies. This restricted their choice in eye-tracking measurements.

As a result, the authors were able to include only eye-tracking scores concerning the average attention paid during the first five seconds of viewing and whether participants fixated on the main elements. Thus, they were able to test whether the advertisement and specific elements of advertisements were able to attract attention. The use of more extensive eye-tracking scores, however, would have enabled the researchers to make more elaborate measurements and draw further conclusions.

## CONCLUSION

To the authors' knowledge, the current research is the first eye-tracking study that also takes magazine direct context into account. Overall, context characteristics appeared to influence the visual attention paid to magazine advertisements, especially

visual attention paid to the three main elements of advertisements. Color, page, and the amount of text in the direct context influenced the magazine reader and directed less visual attention to advertisements.

The effect of color especially was notable. The results showed that the eye fixates on advertisements with multiple colors but also on direct context represented in multiple colors. This color effect was observed for both types of visual attention.

Moreover, the results showed that the amount of red or blue makes a difference. Context in red directs less attention to the main elements of the advertisement and more to the context. Blue works differently: It also directs less attention to the advertisement but only during the first five seconds of viewing. This color effect confirmed the findings of previous studies on attention to web advertising (Diao and Sundar, 2004; Moore, Stammerjohan, and Coulter, 2005) and yellow-pages advertising (Lohse, 1997).

Advertisers could benefit from the current study's insights into specific advertisement characteristics, which may better engage the reading consumer, and context characteristics, which can divert the eye from advertisements. Understanding these characteristics could help advertisers in developing and pre-testing advertisements.

Furthermore, the authors believe that the results of the current study demonstrate the advantages of including color and to position the pictorial in the lower half of the advertisement. The distracting potential of the direct context implies that testing should benefit from showing a test advertisement in a two-page setting with direct context varying in color and amount of text.

When a certain context hinders visual attention to the tested advertisement, it may be beneficial for a marketer to invest additional funds to place a magazine advertisement in the best context. This

could include placing it on a right-hand page next to an article or illustration without too many colors, (especially not too much red) and not too much text. **JAR**

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*Note:* The references of the studies considered in the current authors' vote count are included in the reference list with an asterisk (\*) and refer to Table 1, with the first three letters of the first author and the last two digits of the year, for

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## APPENDIX

For the specific variables and their inter-coder reliability scores, please see the article's Appendix online at <http://warc.me/ACP1Sg>.