

THE PROCESSING OF NATIVE ADVERTISING COMPARED TO BANNER ADVERTISING: AN EYE-TRACKING EXPERIMENT



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ABSTRACT

This paper aims to better understand the effect of visual attention on the processing of banner and native advertisements on Facebook and consequently on brand recognition and brand attitude. Using an eye-tracking experiment (N = 90), we show that a native advertisement attracts more and longer visual attention (i.e., total fixation duration, fixation count, and average visit duration) compared to a banner advertisement. Moreover, we show that longer visual attention (i.e., total fixation duration and average visit duration) increases persuasion knowledge and the recognition of an advertisement, which in turn leads to better brand recognition. Second, we show that neither conceptual persuasion knowledge nor critical processing mediates the effect of visual attention on brand attitude.

Keywords: Social media; Facebook; persuasion knowledge; native advertising; banner advertising, eye-tracking

1 INTRODUCTION

Social media such as Facebook, Snapchat, Twitter, Instagram, Pinterest, or LinkedIn have taken an important place in most consumers' daily lives. The number of worldwide social media users is estimated at 2.86 billion and is expected to grow to about 4.41 billion by 2025 [1]. The amount of time people spend on social media is also constantly increasing. On average, users spend 2 hours and 22 minutes per day on social media [2]. As a result, advertisers have turned their attention to these platforms as well [3]. For example, Facebook - the global market leader in terms of users [4] - reported almost 70 billion dollars in advertising revenue in 2019. Nevertheless, it remains unclear how social media users process advertising on social media.

Consumers on these platforms are exposed to many different brand impressions, some of which are offered simultaneously [5]. Research shows that brand memory decreases when brand exposure occurs in a highly cluttered Facebook environment [5]. Second, as consumers typically use social media for entertainment or to pass the time [6], they might not be interested in the processing of advertising and ignore it. Finally, consumers increasingly use multiple screens and therefore divide their attention [7]. Even though the traditional "hierarchy of effects" and "marketing funnel" models that consider attention and brand cognitions as necessary requirements for affective and behavioral responses are under debate, attention is still an essential variable in the processing of advertising [e.g., 8,9].

Nevertheless, it is unclear to what extent brands actually need to fight for consumers' attention and whether it is even beneficial. On the one hand, increased visual attention could increase consumers' likelihood of actually processing the advertising message. By processing the message, consumers store more brand-related information in memory, which can more easily be retrieved later [10]. As a result, visual attention could positively affect brand recognition. On the other hand, more visual

attention could also increase the likelihood of more critical processing and lower brand attitude [11]. Therefore, we aim to better understand the mechanism through which social media users process advertising on social media.

More specifically, we focus on the role of persuasion knowledge. Persuasion knowledge is defined as “consumers’ theories about persuasion, including beliefs regarding the effectiveness and appropriateness of marketers’ motives, strategies, and tactics, as well as ways of coping with persuasion attempts” [12, p. 198]. As such, persuasion knowledge encompasses a broad range of competencies that all deal with understanding and coping with persuasive attempts [13]. It is an important concept to understand consumer responses to advertising in general and new advertising formats on social media in particular.

Previous research has indicated that not all advertising formats are processed similarly [e.g., 13,14]. In social media advertising, two commonly used formats are banner advertisements and native advertisements. Banner ads are “display advertisements that are usually hyperlinked to the websites of advertised products” [15, p. 121]. Moreover, banner ads in social media are typically shown adjacent to the main message stream and can be clearly distinguished from the page content. Native ads are “paid ads that are so cohesive with the page content, assimilated into the design, and consistent with the platform behavior that the viewer simply feels that they belong” [16, p. 3]. They are presented in a user’s news feed and look similar to messages posted by users. Therefore, a second contribution of the current study is to examine the processing of both banner and native social media advertisements.

Native advertising, like some other “new” advertising formats (e.g., influencer marketing, advergames), intertwines non-commercial and commercial content, making it harder for users to distinguish - between the two [14] and to recognize the persuasive intent [17]. Tutaj and van Reijmersdal [13] found that people perceive native advertising as more informative, more amusing,

and less irritating than banner advertising. They are also less likely to recognize it as advertising and understand its persuasive intent, making them less skeptical towards it.

Moreover, social media are used for non-commercial goals. For these reasons, it might be more challenging for consumers to recognize advertising and activate persuasion knowledge than in other media, such as television [18]. Visual attention can be an important antecedent to the activation of persuasion knowledge (Boerman, van Reijmersdal, and Neijens, 2015). In line with recent research in the context of brand placement, we explicitly distinguish between conceptual persuasion knowledge (i.e., the recognition of the commercial intent of an advertising message) and critical processing (i.e., the negative response that might result from it) [19,11]. Moreover, we explicitly test the effect of conceptual persuasion knowledge on critical processing. We do this by means of an experiment on Facebook in which eye-tracking and subsequent measures are combined. Since different measures for visual attraction could indicate distinct cognitive processing mechanisms, Orquin and Holmqvist [20] suggest studying multiple measures to unravel the processing of stimuli. The inclusion of multiple eye-tracking measures forms an important contribution of the current study, since the processing of social media advertisements is still not fully understood.

In sum, we study the effects of advertising format (banner versus native advertising) on visual attention (total fixation duration, fixation count, and average visit duration) and further on persuasion knowledge and both a cognitive (brand recognition) (Figure 1) and an evaluative dependent variable (brand attitude) (Figure 2) in the context of Facebook. Both brand recognition and brand attitude are considered crucial elements in the persuasion process [21,22].

[Insert Figures 1 & 2 about here]

This study contributes to the literature in several ways. By combining eye-tracking and measuring consumer responses, we are able to show how advertising format and, consequently, visual

attention affect the processing of advertising (through conceptual persuasion knowledge and critical processing) on social media. Furthermore, we build upon the persuasion knowledge model and provide further evidence on the separate effects of conceptual persuasion knowledge and critical processing [19]. As a result, we provide researchers and practitioners with an understanding of whether and when attracting attention in social networking sites ultimately results in positive or negative brand effects.

2 LITERATURE REVIEW AND HYPOTHESES

2.1 Ad Format and Visual Attention

Previous literature has found that banner advertisements attract people's visual attention less compared to other website content they are exposed to. Benway and Lane [23] were the first to find that Internet users have learned to avoid banners (and content similar to banners). They have called this phenomenon 'banner blindness'. An eye-tracking study by Drèze and Hussherr [24] indicates that only half of banner advertisements attract participants' visual attention, and, what is more, participants purposefully avoided banner ads. A more recent industry study confirms these findings: irrespective of whether an item on a website is an advertisement or not, participants rarely look at items that resemble an advertisement [25]. This avoidance behavior is learned behavior: since consumers know, for example, that banners are on the right side of their Facebook newsfeed, they will give that side less visual attention. Native advertising tries to overcome this banner blindness. The industry report from the Nielsen Norman Group shows that an advertisement receives more attention when looks like part of the website (i.e., a native advertisement) [26].

Various measures are used across studies, but individual studies tend to use only a single measure [e.g., either fixation count 24,26, or fixation duration 27]. Orquin and Holmqvist [20] indicate that

different eye-tracking metrics indicate distinct underlying psychological processes. Therefore, it is important to use different measures to understand the processing of different ad formats.

One should first distinguish between fixations and visits. Fixations refer to participants' eyes staying at ("fixating") a particular point within an area of interest (AOI), whereas visits refer to fixating (different points) within one AOI before fixating outside the AOI. For both fixations and visits, we can measure the count, average, and total duration.

First, the count metrics measure the number of fixations (fixation count) or the number of visits (visit count) to an area of interest (AOI) [28]. Higher counts indicate that the individual is returning to (elements of) the AOI (refixating), which could indicate that the stimulus is highly relevant [29], interesting or complex to process [20]. A higher visit count could also indicate that an individual is comparing information between AOIs [30]. In the current study, only fixation count will be taken into account since we aim to compare a banner and a native advertisement in a between-subjects experiment and, therefore, will not include multiple advertisements (AOI) in our stimuli. Therefore, it is expected that no comparison will take place. (The experimental stimuli are discussed in the Method section.)

Second, the average duration measures indicate the average duration of individual fixations (average fixation duration) or visits (average visit duration) within an AOI [28]. A longer average fixation or visit duration indicates engagement with the stimulus and reflects a higher degree of information processing [31,32,20,9]. In the current study, only the average visit duration will be taken into account since the unit of observation is the advertisement and not different elements within the advertisement. Therefore, it seems more valuable to study the average visit duration in the current context.

Finally, the total fixation (visit) duration is "the sum of the duration for all fixations (visits) within an area of interest" (e.g., an advertisement) [28, p. 130]. Even though Orquin and Holmqvist [20]

point out that total duration metrics aggregate data (combining count and duration), they are popular as general measures of visual attention indicating stimulus interest. Including the total fixation (visit) duration in the present study allows us to discuss our findings in the light of previous studies. Nevertheless, examining count and average duration allows us to better understand the processing of the advertisement [20]. We expect the banner blindness documented in prior research to manifest itself across different metrics of visual attention.

H1: A native advertisement in a social networking site receives more visual attention, i.e., a) total fixation duration, b) fixation count, and c) average visit duration than a banner advertisement.

2.2 Visual Attention, Conceptual Persuasion Knowledge and Brand Recognition

Consumers in a decision-making situation acquire evidence in favor of one specific alternative by fixating on it. When consumers have gathered enough evidence, they make a decision. This increased level of visual attention increases cognitive processing [33]. This elaborate processing increases encoding, storing, and retrieval of brand-related information, resulting in better brand memory [12]. Associative network theory posits that memory consists of interconnected nodes that activate each other in relevant contexts [34]. As a result, brand knowledge is a memory node linked to other associations [35]. For example, a consumer might know the brand (e.g., Samsung), which is a node in memory, this is linked to another node about the type of product this is (e.g., smartphone) and to a node with a product characteristic (e.g., good screen resolution). More elaborate processing increases the number of brand-related nodes in memory. As the number of brand-related nodes increases, brand-related information is more thoroughly stored in memory and can be more easily retrieved from memory [10].

The Persuasion Knowledge Model of Friestad and Wright [36] provides a conceptual basis for understanding how consumers respond to persuasive messages such as advertising. It is assumed

that consumers use their persuasion knowledge to process advertising. Consumers are more likely to activate their conceptual persuasion knowledge when processing a message more elaborately, which usually coincides with higher levels of attention [37,38]. Persuasion knowledge comprises a cognitive and an attitudinal dimension [36]: conceptual persuasion knowledge and attitudinal conceptual knowledge. Conceptual persuasion knowledge refers to the recognition of a persuasive message as an advertisement. Moreover, it refers to the fact that the marketing tactics employed are recognized. The attitudinal dimension refers to the critical attitudes that can be activated during the processing of a persuasive message [39]. Boerman et al. [12] provide evidence that visual attention is an antecedent to persuasion knowledge: as visual attention increases, it triggers conceptual persuasion knowledge (awareness of selling intent). As a result, we can expect an increase in visual attention to increase a user's conceptual persuasion knowledge.

H2: More visual attention, i.e., a) total fixation duration, b) fixation count, and c) average visit duration to an advertisement on a social network site, will increase users' conceptual persuasion knowledge.

Conceptual persuasion knowledge, in turn, should lead to better brand memory. In a study on product placement in the popular tv show Friends, Gibson et al. [40] show that participants who were primed with persuasion knowledge were more likely to recall the brands presented in the product placements than those who were not primed. Conceptual persuasion knowledge means that people recognize the message as advertising. This will activate their existing schemata on advertising [41]. Brand information is consistent with a typical advertising schema. So, once consumers recognize a message as advertising, they are aware that advertising typically contains a brand name. This might make them more attentive to the brand name [36] and more likely to encode it in memory. Also, as consumers deliberate on how to cope with the persuasion attempt, they

consider their agent (brand) knowledge. This, too, might make them more likely to encode the brand in memory. They should therefore be better able to retrieve it later. Therefore, we expect:

H3: More conceptual persuasion knowledge will increase users' brand recognition.

Combining H1-H3, we thus expect that visual attention and conceptual persuasion knowledge will serially mediate the effect of the advertising format on brand recognition.

2.3 Conceptual Persuasion Knowledge, Critical Processing and Brand Attitude

The Persuasion Knowledge Model states that an increase in persuasion knowledge results in a coping effort; people have to figure out how to effectively manage their response to the persuasive attempt [36]. As Friestad and Wright [36, p. 3] state: "The term "cope" is neutral with respect to the direction of targets' responses. In particular, we do not assume that people invariably or even typically use their persuasion knowledge to resist a persuasion attempt. Rather, their overriding goal is simply to maintain control over the outcome(s) and thereby achieve whatever mix of goals is salient to them." One way to maintain "control" is to critically process the persuasive episode (i.e., the ad): for example, consumers will scrutinize the content of the message, evaluate the strength (and credibility) of the arguments or question the advertiser's motives [42]. In other words, the activation of persuasion knowledge, the mere recognition that there is a persuasive attempt, is necessary for critical processing to occur. Without persuasion knowledge, consumers will not attempt to cope (and hence cannot develop critical processing).

According to reactance theory [43], people want to maintain their freedom of choice; they do not want to be manipulated. Hence, when people realize they are being influenced, they might attempt to resist the persuasion attempt [44,45]. Research on advertising disclosure indeed indicates that consumers are less likely to be persuaded when they are made aware of a persuasive attempt through a disclosure because of critical processing [46,11].

Importantly, even when persuasion knowledge is activated, people may not always try to resist every persuasion attempt (and thus develop critical processing). Persuasion knowledge does not automatically lead to more critical processing, as reported by, for example, Avramova et al. [19]. Daems et al. [47] even report a decrease in critical processing. Nevertheless, the majority of the previous literature indicates that when a consumer recognizes the persuasive attempt, they are more likely to adopt a more critical processing style [46,12,48]. In line with these findings, we expect that:

H4: More conceptual persuasion knowledge increases critical processing.

A more critical processing style may influence the evaluation of the sender, i.e., the brand [46,12,48]. In line with reactance theory [49], it is expected that when people encounter a persuasive message and generate critical thoughts, they will try to resist the persuasive message because they do not want to be manipulated. The persuasive nature of the message leads to counteracting the persuasion attempt, which may lead to resistance toward the brand and, therefore, a less positive brand attitude [11]. In their study on disclosures, Boerman et al. [46] found that critical feelings towards a persuasive message indeed led to a less favorable brand attitude. Consumers who process an advertisement more critically will more likely criticize the content, which results in more negative brand attitudes [46,11]. Therefore, we expect:

H5: More critical processing will decrease a user's brand attitude.

Combining H4 and H5, we thus expect that critical processing will mediate the effect of conceptual persuasion knowledge on brand attitude.

3 METHOD

3.1 Study Design

We set up an experiment in which we manipulated the advertising format of an advertisement for a smartphone on a fictitious Facebook page. Social media offers several advertising formats (e.g., sponsored posts, pre-rolls, and carousels). Since banner and native advertisements are commonly used, these two were selected for the current experiment. To design realistic stimuli, we needed a brand name. Previous research indicates that brand familiarity could play a role in the development and effects of persuasion knowledge. For example, in a brand placement context, Verhellen et al. [50] and Avramova et al. [51] demonstrate effects of placement prominence for an unfamiliar brand but not for a familiar brand and link this difference to persuasion knowledge. In contrast, Avramova et al. [52] did not find a moderating effect of brand familiarity with the type of speech in brand placement in books. We do not hypothesize a moderating effect of brand familiarity in the current study based on the mixed evidence. We do consider brand familiarity as a replication factor, however. We, therefore, developed a 2 (advertising format: native vs. banner) x 2 (brand familiarity: unfamiliar vs. familiar) full-factorial between-subjects experiment.

Respondents were shown a mock Facebook news feed, including a (fictitious) profile picture update (see Appendix 1). The native advertisement was designed exactly as an actual native Facebook ad would look and was 496 by 605 pixels. The advertisement was embedded in the newsfeed and had the layout of a “regular” post. The heading mentioned “Suggested post,” and it was indicated that the post was “Sponsored”. The brand was the “sender”, with a slogan as the status update (translated from Dutch: “Take razor-sharp pictures under extreme conditions with the new [smartphone brand + model]”). The core of the advertisement consisted of a picture of a skydiver holding a phone. The picture contained the brand logo in the lower right corner. Below the picture, the brand name and model were repeated and accompanied by the text “[Model]’s advanced camera technology ensures that it is easier than ever to take magnificent pictures.” Below

that, a link to the website and call-to-action button for “More information” were shown. At the bottom, the options to like, respond, and share were included. The banner advertisement looked like an actual banner ad on Facebook and was 280 by 257 pixels. It was inserted on the right-hand side of the page with the text “Sponsored”. The picture and slogan were identical to the native advertisement, and the brand name and website were also mentioned. We included a second filler “update” in the banner ad condition to keep the number of messages in the news feed constant across conditions (see Appendix 2).

While the difference in size between the two stimuli could be problematic from an eye-tracking perspective, it does reflect reality on Facebook and therefore adds to the external validity of the research. The location of the ad was also different, and the total size of the advertisement was smaller than the native, and there was no additional text, just like in a real Facebook context [53].

The implications of these choices will be discussed in the limitations.

To select two brands that differed in brand familiarity, we set up a pretest. Respondents (N=56) scored 22 brands (including six fictitious brands as fillers) on their brand familiarity (“How familiar are you with the following smartphone brands?”). Samsung was found to be the most familiar brand ($\bar{X}=6.84$; $SD=.417$). ZTE was the least familiar, existing brand ($\bar{X}=1.80$; $SD=1.577$). A paired samples t-test shows that ZTE and Samsung are significantly different with respect to brand familiarity ($t(55) = -24.15$; $p < .001$).

3.2 Procedure and Measures

The study was conducted at a Belgian university. Students and university staff were contacted via e-mail to participate in an eye-tracking study, which would take up to 20 minutes. Participants (N = 90) ranged in age from 18 to 40 ($\bar{X}=24.12$; $SD=3.44$) and 41.8% was male. We used a Tobii Pro TX3000 eye-tracker mounted underneath a Tobii Pro 23-inch monitor with full HD resolution

(1920 x 1080). The Tobii Pro TX300 performs 300 measures per second. Participants were asked to take place in front of the monitor, and for each participant, the first author calibrated the eye-tracker. This guarantees that the fixations of the participant's eyes are correctly tracked. Participants were randomly assigned to conditions.

Next, the researcher stepped out of the room, and the on-screen instructions guided participants through the experiment. First, they were asked to process the Facebook page as if they would do at home. The eye-tracker measured the number of fixations to the Facebook page and the advertisement as a specific area of interest (AOI). Half of the native advertisement was visible without scrolling; therefore, respondents had to scroll to see the full native advertisement. Nevertheless, the software did not stop or cut parts of the recording when participants scrolled the page. Based on these fixations, the total fixation duration (\bar{X} = 8.843, SD = 8.043), fixation count (\bar{X} = 34.154, SD = 37.970) and average visit duration (\bar{X} = .994, SD = .679) to the ad were computed. When participants finished scrolling through the page, they were sent to a follow-up survey that first recorded their socio-demographics (gender, age, and educational level). Second, brand recognition was measured by asking participants to indicate what brand the advertisement they saw on the page was for, from a list of 5 brands (i.e., the two advertised brands and three filler brands). When respondents correctly recognized the brand, this was coded as "1". If the brand was not recognized, this was coded as "0". Then, participants reported their brand attitude [\bar{X} = 4.462, SD = .8215, 4 items, e.g., 'I respond favorably to Samsung/ZTE.', α = .812, 54] and brand familiarity [\bar{X} = 5.364, SD = 2.547, 1 item, 'How familiar are you with Samsung/ZTE?', 55]), their conceptual persuasion knowledge [\bar{X} = 5.53, SD = 1.109, one item, 'The item about Samsung/ZTE was advertising.', 11] and their critical processing of the message [\bar{X} = 3.580, SD = 1.423, one item, 'While watching the Facebook page, I was skeptical toward the item about Samsung/ZTE.', 11] on seven-point Likert scales. Except for critical processing, the single-item measures have been

successfully employed in previous advertising and communication research [e.g., 35,56,57,55]. Moreover, the constructs are considered to be double concrete [58]: the objects and constructs' attributes are easily and uniformly imaged [59].

4 RESULTS

To test our hypotheses, we conducted separate analyses for the two dependent variables, brand recognition, and brand attitude. We analyzed the data using Hayes' PROCESS macro [60] (model 6), with 5,000 bootstrap samples in both models. In both models, the advertising format was entered as a dichotomous independent variable (0 = banner advertisement, 1 = native advertisement). Visual attention and conceptual knowledge were entered as serial mediating variables for brand recognition, whereas visual attention, conceptual knowledge, and critical processing were entered as serial mediating variables for brand attitude. We entered the measures for visual attention (i.e., total fixation duration, fixation count, and average visit duration) in separate models to more clearly understand the effects of visual attention. Initial analyses indicated that brand familiarity did not act as a moderating variable on any of the relationships in the model. Therefore, the data were pooled across the two brands, with brand familiarity (0 = unfamiliar brand, 1 = familiar brand) as a covariate. The effect of brand familiarity on brand recognition is not significant, while its effect on brand attitude is (see Tables 1 – 2 for the regression coefficients and significance levels). Since respondents could look at the Facebook page as long as they wanted, the exposure time was entered as a covariate. The effect of exposure time on brand recognition is negative and significant. The effect of exposure time on brand attitude is not significant. Table 1 shows the results for the models with brand recognition. The advertising format has a positive, significant direct effect on total fixation duration, fixation count, and average visit duration. This confirms H1.

Total fixation duration and average visit duration have a positive, significant effect on conceptual persuasion knowledge. Fixation count does not have a significant effect on conceptual persuasion knowledge. H2a and c are confirmed; H2b is not confirmed.

[Insert Table 1 about here]

Conceptual persuasion knowledge has a positive, significant direct effect on brand recognition. H3 is confirmed. In sum, the indirect effect of ad format on brand recognition through visual attention (total fixation duration and average visit duration) and conceptual persuasion knowledge is positive and significant (Table 3). The indirect effect of ad format on brand recognition through fixation count and conceptual persuasion knowledge is not significant.

[Insert Table 2 about here]

Table 2 shows the results for the models with brand attitude as the dependent variable. We hypothesized that more conceptual persuasion knowledge would increase critical processing. However, our findings do not support this hypothesis (H4). Furthermore, we hypothesized that critical processing would decrease brand attitude (H5). Our findings do not confirm this hypothesis either. In sum, the indirect effect of ad format on brand attitude through visual attention, conceptual persuasion knowledge, and critical processing is not significant (Table 3).

[Insert Table 3 about here]

5 DISCUSSION AND CONCLUSION

We examined the impact of advertising format via visual attention and conceptual persuasion knowledge on brand recognition and via visual attention, conceptual persuasion knowledge, and critical processing on brand attitude. Our findings indicate that native advertisements receive more and longer visual attention (fixation count, average visit duration, and total fixation duration) compared to banner advertisements. We have examined different eye-tracking measures in order

to provide a more complete picture of the processing mechanism. As Orquin and Holmqvist [20] highlighted, total fixation duration is a popular metric but aggregates data, making it harder to understand the underlying processing mechanisms. Nevertheless, it allows us to compare with previous research. All respondents fixated at least once on the banner ad, suggesting that they are not entirely blind to banners. In line with previous research, individuals seem to avoid banners (rather than be blind to them) by paying less attention to them [24,25]. Consumers seem to know that social media contain banner ads, such as on the right to the main content, and pay less attention to them. The longer fixation duration suggests that the native advertisement seems to spark more interest compared to the banners. Native ads might also be more complex to process, as suggested by Orquin and Holmqvist [20]. Due to validity considerations, the banners were considerably smaller than the native advertisements, and the native advertisement also contained a headline. As such, the native advertisement is by nature more complex to process, as it is larger and contains more text.

Moreover, our findings indicate that users spent more time, on average, per visit on the native advertisements compared to the banner advertisement. This could indicate that they were more engaged with the native advertisement and, therefore, processed it more elaborately [20,9]. The longer the visit, the more time individuals spent within the AOI (i.e., the advertisement). The larger size of the native advertisement, the placement, and the presence of a headline could be part of the reason why individuals spend longer fixating on the native advertisement than the banner advertisement (see further research section).

An increase in visual attention increases the likelihood of recognizing the advertisement as advertising (conceptual persuasion knowledge). Our findings indicate that the total fixation duration increases the likelihood that individuals recognize the advertisement as advertising (i.e., conceptual persuasion knowledge). However, since this is an aggregate measure, it is unclear what

is underlying this effect. Our findings indicate that fixation count does not drive conceptual persuasion knowledge. However, the average visit duration does. This seems to indicate that, indeed, average visit duration is a measure of more elaborate cognitive processing that helps individuals recognize an advertisement as being advertising.

Contrary to what was expected, more conceptual persuasion knowledge does not lead to more critical processing of the advertisement. Note that Friestad and Wright [36] already emphasize that the activation of persuasion knowledge does not automatically lead to counter-arguing. Other studies, too, find a lack of relationship between the two. For example, Avramova et al. [19] found that conceptual persuasion knowledge did not significantly increase critical processing of brand placements in books, except when participants were reading in a foreign language. Our findings support the idea that it is important to distinguish between advertising recognition, i.e., conceptual persuasion knowledge, which is affectively neutral, and critical processing (assumed to be more negative). These two distinct processes are thus not always triggered consequently. In fact, the effect of conceptual persuasion knowledge on brand attitude was actually positive, albeit marginally significant. Persuasion knowledge models purport that coping behavior is “neutral with respect to the direction of targets responses” [36, p. 3]. The purpose of advertising is to portray the brand or the product in a positive way. If people recognize the persuasion attempt and do not counter-argue or process the message critically, they do not necessarily negatively correct their attitudes. To cope with a persuasion attempt, people can also evaluate marketing tactics, and when people feel that these are appropriate or effective, they might not negatively correct their attitudes and even might be persuaded by the persuasion attempt. As such, consumers might realize that for a website to remain free to them, it is necessary to have advertising on the site. For example, in a study by Becker-Olsen [61], respondents reported that they would support advertisers on news sites because they realize how difficult it is to get advertisers on the news site. Therefore, respondents

might not find it inappropriate that there is advertising on a social network site, as long as they can recognize it as such, so they do not feel deceived [61]. Even when people are aware of persuasion attempts, they might not be motivated or able to negatively correct their brand attitude. For memory effects, increased visual attention increases the recognition of the persuasive attempt (conceptual persuasion knowledge), which in turn increases brand recognition. Our findings indicate that the indirect effect of the advertising format through visual attention and conceptual persuasion knowledge on brand recognition is significant. This is in line with previous literature indicating that visual attention indicates more elaborate processing of an advertising message [33,12], of which the recognition of the persuasive attempt, as well as an increased brand recognition, are the result.

6 MANAGERIAL IMPLICATIONS

Our findings also have practical implications. Marketers should be aware of their advertising objectives and subsequently how the ad format might help them realize these objectives [61,13]. First, it is advisable to use native advertisements instead of banner advertisements to attract consumers' visual attention. Our findings confirm previous research indicating that, generally speaking, banner advertisements are more often avoided than native advertisements (see also Benway and Lane [23],Nielsen [25]). Nevertheless, our findings indicate that all respondents fixated on the banner at least once. This might be sufficient to lead to downstream effects.

Moreover, we found indications that native advertisements spark more interest (more fixations) and result in more elaborate processing (longer average visit duration). This more elaborate processing does result in higher conceptual persuasion knowledge (recognizing an advertisement as such), which in turn does not result in more critical processing or brand attitude, but does increase brand recognition. Managers are also encouraged to develop ads that result in longer visits

and viewing duration since this will improve the encoding and storing of brand-related information in memory [12]. As a result, the consumer will have more brand-related nodes in memory, allowing for a more easy retrieval of brand-related knowledge [10].

Marketers should not be afraid to clearly disclose the persuasive intent of their messages. This leads to more ad recognition and eventually to more brand recognition without negative downstream effects on brand attitude. Native ads may attract more visual attention precisely because they do not look like ads. However, at this point, recognizing these ads does not lead to negative downstream effects, quite the contrary. In sum, advertisers should use native ads, stimulate viewing time and duration, and clearly disclose their ads for the best downstream effects. The avoidance of banner ads is learned behavior: consumers have learned that the right-hand side of the news feed in social media contains advertising and, thus, pay little attention to it. In the future, people may (learn to) avoid native advertisements, too, leading to more challenges for advertisers.

7 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The limitations of this study provide opportunities for future research. Eye-tracking has the advantage of being an implicit measure of attention compared to self-reported behavior and is less prone to social desirability and experience with surveys. On the other hand, eye-tracking studies do have two major drawbacks. First, they are artificial environments [24]: our respondents only saw one banner or one native advertisement accompanied with a couple of filler items, whereas in real life, people will be exposed to a large number of posts from their friends and pages and brands they follow as well as a combination of both banner and native advertisement. Although we ensure the internal validity of the experiment, we had to give in on external validity. We suggest that future research considers using more filler posts and even combines banner and native advertising in one page or even uses its respondents' real social networking page.

Moreover, based on Orquin and Holmqvist [20], we suggest using more trials in an eye-tracking experiment to reduce the average bias in the stimulus sample. A second limitation of our study is that native and banner advertisements have different sizes, locations, and content information (the native advertisement contained a headline while the banner advertisement did not). Given the artificial experimental environment, we did try to keep our stimulus material as naturalistic and thus externally valid as possible. Therefore, we designed the stimuli such that the size of the two types of advertisements is different, as they, in reality, are [e.g., 53]; we included the headline underneath the native advertisement and not in the banner. We positioned the banner at the right-hand side of the feed, as is always the case on desktop or laptop Facebook. Without taking these real-life differences into account, it would simply not have been possible to compare the two advertising formats with a sufficient degree of realism. We did try to keep the banner and native advertisements as similar as possible (e.g., in terms of the picture used).

Nevertheless, we suggest future research to disentangle the effects of advertising format (size and content) and location to better understand why banner and native advertisements attract different levels of visual attention. Moreover, we only compared banner and native advertisements since they are commonly used and are visually comparable. However, many other advertising formats in social media could be studied (e.g., carousels, videos, video pre-rolls, or mid-rolls). When comparing more than two advertising formats, it would be advisable to use the area-normalized time to control the advertisement's size. This is calculated by dividing the eye-tracking duration (e.g., average visit duration) by the percent of the area occupied by an AOI on a product page [62]. A third drawback is that the cost and the infrastructure prevent the use of large samples in eye-tracking research [24]. The current study measured 90 participants, which resulted in 45 respondents in the banner and 45 respondents in the native advertising condition. Although this is

in line with previous experimental research (e.g., Boerman et al. [12]: 45 respondents per condition; Smink et al. [63]: 42 respondents per condition), future research could examine a larger sample. Since new advertising formats, such as native advertising, intertwine commercial and non-commercial content, they are more difficult to distinguish for consumers [14]. As a result, it becomes harder for consumers to recognize the persuasive intent [17]. Campbell and Marks [64, p. 600] consider native advertisements on social media as advertorials, which are created to look like surrounding content. The goal of these advertorials is not to be perceived as an ad. That is what, for instance, the Federal Trade Commission [65] considers as deceptive since it misleads consumers about the ads' commercial nature. This includes any implied or expressed representation that the advertisement comes from a party other than the advertiser. The current study did not measure perceived deceptiveness. However, future research could examine perceived deceptiveness as an interesting additional mediating variable, for example, in the relationship between conceptual persuasion knowledge and critical processing. When an advertisement is recognized as advertising, even though it's commercial nature is more hidden (e.g., in the case of native advertisements), consumers might consider it as being more deceptive, which in turn could lead to more critical processing. Moreover, we find that average visit duration leads to a higher level of conceptual persuasion knowledge, whereas fixation count does not. This could indicate that these two measures produce different cognitive processes. Previous research has indeed indicated that more fixation count is indicative of heightened interest [29] or complexity of the stimulus [20], whereas a longer average visit duration could indicate more elaborate processing of the stimulus [9,20]. We have not measured the cognitive processes in the current study and, therefore, suggest future research to take the cognitive process into account to validate our findings. Next, we have used two existing brands to manipulate brand familiarity. Nevertheless, we did not measure respondents' pre-existing brand attitudes toward the brand. Respondents were randomly

allocated to the different conditions. Therefore, the potential effect of pre-existing brand attitudes would be evenly distributed across the different conditions. As such, the potential effect would be leveled out across conditions. Nevertheless, future research could consider taking pre-existing brand attitudes into account when examining familiar brands. In that case, the researcher should be aware that measuring pre-existing attitudes towards the brand could affect results since it directs respondents' attention to the brand in the stimulus material[59]. Therefore, the researcher could use a control group that is not exposed to stimuli to control for pre-existing brand attitudes [e.g., 66].

Even though our operationalization of brand recognition is in line with previous research [e.g., 35,56,57], we acknowledge that the brand name is only one part of a brand. Therefore, we would advise future research also to examine the effects of advertising format and visual attention on other branding elements (e.g., brand associations, product knowledge).

Finally, we have used single-item measures for both conceptual persuasion knowledge and critical processing to avoid participant fatigue. This seems warranted since we measure double concrete phenomena [58], meaning that the objects and constructs' attributes are easily and uniformly imaged [see 59]. Nevertheless, future research could adopt multi-item measures such as suggested by Boerman et al. [67].

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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FIGURES

Figure 1. Conceptual framework for brand recognition

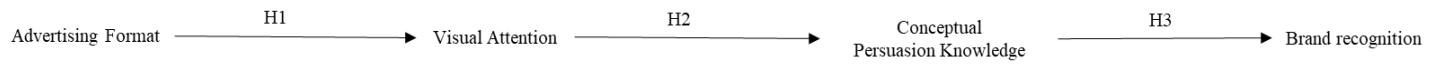
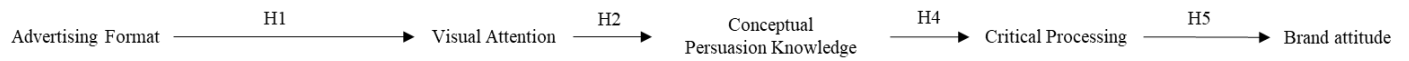


Figure 2. Conceptual framework for brand attitude



TABLES

Table 1. Unstandardized Regression Weights for Brand Recognition

	Total Fixation Duration		Conceptual PK		Brand recognition	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	1.996	.123	5.132	<.001	-5.504	.002
Advertising format (0 = banner, 1 = native)	5.583	<.001	-.374	.142	.320	.609
Total Fixation Duration			.060	.002	.441	<.001
Conceptual PK					.584	.030
Brand Familiarity (covariate)	-.073	.803	.053	.251	.283	.027
Total exposure time	.051	.017	-.002	.307	-.015	.002
R ²	.494		.120		.383 (McFadden)	
	Fixation Count		Conceptual PK		Brand recognition	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	1.974	.724	5.237	<.001	-4.389	.009
Advertising format (0 = banner, 1 = native)	25.540	<.001	-.233	.359	.060	.926
Fixation Count			.008	.209	.169	<.001
Conceptual PK					.532	.051
Brand Familiarity (covariate)	.406	.776	.046	.327	.238	.058
Total exposure time (covariate)	.206	.014	-.001	.725	-.036	.002
R ²	.389		.065		.412 (McFadden)	
	Average Visit Duration		Conceptual PK		Brand recognition	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	.824	<.001	4.886	<.001	-5.814	<.001
Advertising format (0 = banner, 1 = native)	.664	<.001	-.332	.212	.397	.493
Average Visit Duration			.444	.014	1.525	.022
Conceptual PK					.739	.003
Brand Familiarity (covariate)	-.029	.281	.062	.180	.184	.076
Total exposure time (covariate)	.000	.234	.001	.289	.001	.654
R ²	.267		.077		.232(McFadden)	

Table 2. Unstandardized Regression Weights for Brand Attitude

	Total Fixation Duration		Conceptual PK		Critical processing		Brand attitude	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	1.996	.152	5.132	<.001	2.865	.001	3.699	<.001
Advertising format (0 = banner, 1 = native)	5.583	<.001	-.374	.142	.277	.411	-.048	.801
Total Fixation Duration			.060	.002	-.010	.726	.018	.209
Conceptual PK					.147	.343	.103	.170
Critical processing							-.056	.340
Brand Familiarity (covariate)	-.073	.803	.053	.251	-.018	.772	.068	.048
Total exposure time (covariate)	.051	.017	-.002	.307	-.001	.806	-.001	.744
R ²	.494		.120		.025		.113	

	Fixation Count		Conceptual PK		Critical processing		Brand attitude	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	1.974	.724	5.237	<.001	2.952	.001	3.631	<.001
Advertising format (0 = banner, 1 = native)	25.540	<.001	-.233	.359	.202	.547	.015	.937
Fixation Count			.008	.209	.001	.906	.002	.614
Conceptual PK					.126	.383	.124	.092
Critical processing							-.059	.321
Brand Familiarity (covariate)	.406	.776	.046	.327	-.017	.787	.065	.063
Total exposure time (covariate)	.206	.014	-.001	.725	-.001	.559	<.001	.963
R ²	.389		.065		.024		.101	

	Average Visit Duration		Conceptual PK		Critical processing		Brand attitude	
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
constant	.824	<.001	4.886	<.001	2.955	<.001	3.587	<.001
Advertising format (0 = banner, 1 = native)	.664	<.001	-.332	.212	.310	.357	.057	.760
Average Visit Duration			.444	.014	-.135	.630	-.003	.978
Conceptual PK							.133	.072
Critical processing							-.059	.317
Brand Familiarity (covariate)	-.029	.281	.062	.180	-.021	.721	.065	.066
Total exposure time (covariate)	<.001	.234	.001	.289	-.001	.420	<.001	.766
R ²	.267		.077		.027		.098	

Table 3. Indirect effects

	<i>b</i>	LLCI	ULCI
Total fixation duration → brand recognition	.111	.012	.333
Fixation count → brand recognition	.085	-.002	.277
Average visit duration → brand recognition	.213	.038	.572
Total fixation duration → brand attitude	-.002	-.012	.003
Fixation count → brand recognition	-.001	-.009	.002
Average visit duration → brand recognition	-.002	-.015	.004

APPENDICES

1. Stimulus example for the condition with a native advertisement for a familiar brand (in Dutch)

The image is a screenshot of a Facebook interface in Dutch. At the top, there is a search bar with the text "Zoek naar personen, plaatsen en dingen". Below the search bar, the user's profile "JJ" is visible, along with options for "Startpagina", "Profiel bewerken", and "Status bijwerken".

The main content area shows a post from "Sarah Janssen" who has updated her profile picture 24 minutes ago. The profile picture is a woman with long hair in a field. Below the photo are interaction options: "Vind ik leuk", "Reactie", and "Delen".

Below the post is a sponsored advertisement for Samsung Mobile. The ad features a photo of a person skydiving and holding a Samsung S7 smartphone. The text of the ad reads: "Neem haarscherpe foto's in extreme condities met de nieuwe Samsung S7". Below the photo is the Samsung logo and the text "Samsung S7". A small text below the logo says: "De S7 zijn geavanceerde cameratechnologie zorgt ervoor dat het eenvoudiger is dan ooit om prachtige foto's te trekken." At the bottom of the ad, there is a link to "WWW.SAMSUNG.COM" and a button for "Meer informatie".

At the bottom of the ad, there are interaction options: "Vind ik leuk", "Reactie", "Delen", and a count of "123" likes, "10" comments, and "15" shares.

2. Stimulus example for the condition with a banner advertisement for an unfamiliar brand (in Dutch)

The image shows a screenshot of a Facebook profile page. The top navigation bar includes a search bar with the text "Zoek naar personen, plaatsen en dingen", the user's name "Jij", and the "Startpagina" button. The left sidebar contains navigation options: "Profiel bewerken", "FAVORIETEN" (Nieuwsoverzicht, Berichten, Evenementen), "PAGINA'S" (Chiro Jeugd, Pagina's ontdekken), "GROEPEN" (Universiteit Antwerpen, Voetbalclub, Studentclub), "APPS" (Games), "INTERESSES" (Pagina's en beken...), and "EVENEMENTEN" (Evenement maken).

The main content area features a status update form with the text "Wat ben je aan het doen?" and buttons for "Iedereen" and "Plaatsen". Below this is a section for "Meest recente verslagen bekijken" and "Topverslagen bekijken".

The feed contains two posts:

- A post by Sarah Janssen, updated 24 minutes ago, featuring a photo of a woman in a white dress in a field. The caption reads "Sarah Janssen heeft haar profielfoto bijgewerkt." Below the photo are interaction options: "Vind ik leuk", "Reactie", and "Delen".
- A post by Christophe Peeters, updated 58 minutes ago, featuring a photo of a tropical beach. The caption reads "Christophe Peeters heeft zijn omslagfoto bijgewerkt." Below the photo are interaction options: "Vind ik leuk", "Reactie", and "Delen".

On the right side, there is a sponsored advertisement for ZTE. The ad is titled "GESPONSORD" and shows a person skydiving. The text below the image reads: "ZTE www.ztedevices.com Neem haarscherpe foto's in extreme condities met de nieuwe Axon". At the bottom of the ad, there are links for "Nederlands", "Privacy", "Gebruiksvoorwaarden", "Cookies", "Jouw advertentievoorkeuren", and "Meer". The footer of the ad says "Facebook © 2015".