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Do color and product congruence positively influence banner ads' efficacy?

An eye-tracking study

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Abstract

Banner advertising is a large market within digital advertising, which is still expected to grow. Therefore, it is important to identify which elements contribute to the effectiveness of banner advertising. Important elements in advertisements are color and congruence. Yet, the influence of congruence between color of the banner ad and product category on the banner ads' efficacy has not been studied before. The current experimental study was conducted to investigate the influence of this type of congruence. The banner ads' efficacy was assessed with attention, attitude towards the ad and brand, and purchase intention. Attention was measured with an eye-tracker that measured total fixation duration, fixation counts, and time to first fixation. Results showed that, for functional products, a higher purchase intention was reported for congruent banners than for incongruent and neutral banners. No influence of congruent banner ads on attention and attitude towards the ad and brand was found.

Keywords: banner ads; congruence; color; product category; attention; attitude; purchase intention

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Introduction

The first banner ads were launched in 1994, starting a revolution in web content and advertising that is still growing today (“Welcome the,” 2014). Today, banner advertising is the third largest market within digital advertising, with a global revenue of US\$55.9 billion in 2018 which is expected to grow to US\$70.7 billion in 2023 (“Digital Advertising,” 2019). The banner advertising industry has grown from web banners on regular websites such as clothing web shops, to social media ads such as Facebook banners, Instagram sponsored ads, and Snapchat geofilters.

Banner advertising is also known as display advertising, since banner ads are based on images rather than text. A banner ad is an advertisement which appears on a web page, and is presented as an image (i.e. static banner) or as a multimedia object (i.e. animated banner). The aim of banner advertising is promoting a brand and its product, and to bring visitors from the host website to the advertiser’s website, by making visitors click on the banner ad (Hayes, 2019). Click-through rate, obtained by dividing the number of times an ad is clicked by the total number of times the ad appears, may be an indicator for an effective banner ad (Briggs & Hollis, 1997). However, mere exposure to banner ads is sufficient to increase the likelihood of purchase (Briggs & Hollis, 1997; Manchanda, Dubé, Goh, & Chintagunta, 2006). Accordingly, banner ads are effective in increasing advertisement awareness, brand awareness, brand image, site visits, and purchase intention, and may contribute to brand building (Drèze & Hussherr, 2003; Ilfeld & Winer, 2002; Lohtia, Donthu, & Hershberger, 2003; Sherman & Deighton, 2001).

As the banner advertising industry is still growing, it is of great importance to find out what elements may or may not contribute to the effectiveness of banner advertising.

Important elements in advertisements that have been widely studied are color and congruence. The following provides an elaborative overview of the existing literature on these elements.

Color

Color is an extremely salient feature in advertising (Panigyrakis & Kyrousi, 2015). A study found that consumers browsing through ads, paid more attention to colored ads, and perceived them sooner than ads without color (Lohse, 1997). In addition, certain brands are associated with certain colors. For example, Marlboro is associated with red, Cadbury is associated with purple and Guinness is associated with black (Grimes & Doole, 1998). The inherent meaning of color can be described in terms of emotions, salient qualities, and personality traits (Grimes & Doole, 1998). For instance, black is associated with powerful and expensive, blue with dependable, high quality and trustworthy, red with love, adventure, exciting, powerful and cheerful, purple with inexpensive and progressive, yellow with happy, and gray with dependable and high quality (Jacobs, Keown, Worthley, & Ghymn, 1991; Wexner, 1954).

Color, as well as symbol, lettering, and shape, contributes to visual equity (Lightfoot & Gerstman, 1998). Visual equity enables a brand to stand out, because of the visual form. Hence, if appropriately chosen, color may contribute to 'inherent and immediate value to the brand' (Kohli & LaBahn, 1997, p. 67). Color provides a beneficial retrieval cue when adults and children learn brand names (Macklin, 1996; Tavassoli, 2001). Moreover, color elicits various associations which, without prior conditioning, can be used to convey the desired image of a brand in the consumer's mind (Madden, Hewett, & Roth, 2000). For instance, it is suggested that blue retail environments are preferred over red

ones, as they appear to be more relaxing, stimulate a longer browsing period, and promote a greater purchase intention (Bellizzi & Hite, 1992). Therefore, the color blue can be perceived as more congruent with retail environments than the color red.

Congruence

Prior research has shown that congruence between advertising aspects facilitates advertising effectiveness. An advertisement is perceived as more consistent, and facilitates brand attitude and purchase intention, when the product (e.g. energy bar) and the message source (e.g. athlete) are congruent rather than incongruent (e.g. an athlete endorsing a candy bar or an actor endorsing an energy bar; Pradhan, Duraipandian, & Sethi, 2016; Wright, 2016). Another study investigated the congruence between emotion and category, and found that brand evaluation is enhanced when the emotional benefit proposition of the brand corresponds to the emotions associated with the use of the product (Ruth, 2001). Furthermore, multiple studies found a positive influence of ad and context congruence (e.g. thematic congruence between an ad and the context of the website) on attention and attitude towards the ad (Luan, Yao, Shen, & Xiao, 2018; Porta, Ravarelli, & Spaghi, 2013; Rieger, Bartz, & Bente, 2015). In addition, a recent study found that participants gave more positive ratings and paid more attention to banner ads when the color and text are congruent than when color and text are incongruent. Color and text can be seen as congruent when the content of the text and the meaning of the color are aligned, for example a slogan regarding fire with the color red, or a slogan regarding the forest with the color green (Zhang, Bao, & Xiao, 2019).

Bottomley and Doyle (2006) investigated the congruence between color and product. They found that it is more appropriate for functional products (e.g. power tools,

kitchen roll or car tires) to be presented in functional colors (e.g. blue, grey or black), and for sensory-social products (e.g. nightclub, perfume or expensive restaurant) to be presented in sensory-social colors (e.g. red, purple or pink). Functional products or brands satisfy the utilitarian needs of consumers for problem prevention or problem solving, whereas sensory-social products or brands satisfy the needs for affiliation, group membership, self-identity, and sensory stimulation and pleasure (Park, Jaworski, & MacInnis, 1986). Hence, color and product can be perceived as congruent when the color is matched with the product category. However, the influence of color and product congruence on attention, attitude towards the ad and brand, and purchase intention has not yet been investigated. Although these variables have not been studied on this topic before, they are particularly relevant as they are often used to measure the efficacy of ads. A brief overview of the existing literature on these variables will be provided, starting with the findings regarding attention.

Attention

Kahneman (1973) defines attention as the amount of cognitive capacity devoted to a stimulus. Visual attention enables a selective processing of the vast amount of information by focusing on certain aspects of the information in the visual scene while ignoring others (Carrasco, 2011). Monitoring individuals' eye movements provides an objective measure of their attention towards a stimulus (Lee & Ahn, 2012). Common eye-tracking measurements for attention are total fixation duration, fixation counts and time to first fixation (Pieters & Wedel, 2004; Zhang et al., 2019). These attention measurements objectively estimate the ads' efficacy.

Salient features in advertisement, which draw attention, can be the characteristics of an ad (e.g. color, text, position), the content, and the congruence between the content of the ad and the media type (Calder, Malthouse, & Schaedel, 2009). In addition, congruent banner ad elements can grab more attention than incongruent ones (Luan et al., 2018; Porta et al., 2013; Rieger et al., 2015; Zhang et al., 2019). Thus, congruence between color and product category in banner ads may be a salient feature that grabs the attention. Accordingly, congruence between color and product category might grab more attention than incongruence.

Attitude

Attitudes are ‘mental states used by individuals to structure the way they perceive their environment and guide the way they respond to it’ (Aaker, Kumar, & Day, 1995, p. 254). An attitude towards an ad is defined as a ‘learned predisposition to respond in a consistently favorable or unfavorable manner toward advertising in general’ (MacKenzie & Lutz, 1989, p. 54). Attitudes are key determinants of behavior, as is known from the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and the Theory of Planned Behavior (Ajzen, 1991). Attitudes towards the ad and brand have a substantial influence on purchase intentions (Lutz, 1985; MacKenzie & Lutz, 1989; Tang, Wang, & Lu, 2014) and are significant indicators for the ad’s efficacy (Chen & Wells, 1999). The positive relationship between attitude towards the ad and attitude towards the brand is empirically confirmed in several ad contexts (Edell & Burke, 1987; MacKenzie & Lutz, 1989; Spears & Singh, 2004). Besides, it is found that the level of attention paid to the ad and the positive attitude developed towards the ad are positively associated (Thorson, Chi, & Leavitt, 1992). Given the strong positive relationship between attitude towards the ad and attitude towards the

brand on the one hand, and the positive association between attention and attitude towards the ad on the other, attention may also have a positive association with attitude towards the brand. In addition, congruent ad elements can positively affect attitude towards the ad (Luan et al., 2018; Porta et al., 2013; Rieger et al., 2015; Zhang et al., 2019) and the brand (Pradhan et al., 2016; Ruth, 2001; Wright, 2016). Hence, congruence between color and product category in banner ads may have a positive influence on the attitude towards the ad and the brand.

Purchase intention

Purchase intention is closely related to actual purchase behavior, which is the ultimate goal of any company (Ghani, Ahmad, & Iqbal, 2012). Advertising effectiveness refers to how well an ad induces the consumer's purchase intention (Ajzen, 2002). As it is found that congruent ad elements can positively affect purchase intention (Pradhan et al., 2016; Wright, 2016), congruence between color and product category in banner ads may positively influence purchase intention. Furthermore, research into the direct influence of attention on purchase intention shows mixed results. Eye-tracking studies indicate that attention is positively associated with choice and sales (Lohse, 1997; Scheier, 2003) and that reduced attention has a negative effect on sales (Janiszewski, 1998). On the contrary, other studies suggest that minimal attention has potential implicit positive effects on purchase intention (Auty & Lewis 2004; Baker, 1999; Shapiro, MacInnis, & Heckler, 1997). However, as attitudes positively affect purchase intentions and as attention and attitudes are positively associated, attention and purchase intention might also be positively associated.

The present study

The aim of this study is to identify whether congruence between color and product category in banner ads grabs more attention and is positively associated with attitude and purchase intention. Furthermore, the aim is to identify whether attention is positively associated with attitude and purchase intention, and whether attitude is positively associated with purchase intention. According to the study from Bottomley and Doyle (2006), red is more appropriate for sensory-social products than blue, and blue is more appropriate for functional products than red. In addition, white is considered a neutral color (Schifferstein & Tanudjaja, 2004; Singh, 2006). Therefore, in this study, blue is used as a functional color, red is used as a sensory-social color, and white is used as a neutral color. Hence, banner ads with functional products presented in blue and banner ads with sensory-social products presented in red are the congruent ones, banner ads with functional products presented in red and banner ads with sensory-social products presented in blue are the incongruent ones, and banner ads with functional or sensory-social products presented in white are the neutral ones. It is hypothesized that:

H1: Congruent banner ads will grab more attention than incongruent banner ads.

H2: Congruent banner ads will influence viewers' attitude towards the brand and ad more positively than incongruent banner ads.

H3: Congruent banner ads will promote a higher purchase intention than incongruent banner ads.

H4: More attention is positively associated with attitude towards the brand and ad, and purchase intention.

H5: Attitude towards the brand and ad is positively associated with purchase

intention.

Attention was assessed with an eye-tracker that measured the total fixation duration, the fixation counts and the time to first fixation. Attitudes towards the ad and brand were assessed with a five item, 7-point Likert scale, and purchase intention was assessed with a 7-point Likert scale.

Method

Participants and design

A total of 101 participants (72 females; $M_{age} = 21.9 \pm 2.7$ years) were recruited in person, through flyers, and through the website ‘Sona’ from Leiden University for psychology students who need to participate in research to receive credits. Most participants were recruited in the Faculty of Social and Behavioural Sciences from Leiden University. All participants had normal color vision.

This study was a laboratory experiment which had a 2 (product: functional vs. sensory-social) x 3 (congruence: congruent vs. neutral vs. incongruent) mixed design, with product category as a between conditions variable and congruence as a within conditions variable. Each participant was randomly assigned to either the functional product condition ($n = 50$) or the sensory-social product condition ($n = 51$). Therefore, half of the participants took part in each between-subjects condition. As white is seen as a neutral color, it is used as a control condition. This protocol was approved by the ethical committee of the Faculty of Social and Behavioural Sciences from Leiden University.

Procedure

When participants came to the laboratory, they were welcomed and escorted to the small room and were asked to sit on the chair in front of the computer screen. Before

starting the experiment, they were instructed to read and sign the informed consent. After randomly assigning each participant to either the functional or the sensory-social product condition, we calibrated the eye-tracker for each participant individually to make sure that their eye movements were accurately detected. Next, they were asked to read the general instructions displayed on the laptop screen, which were followed by the nine images. When finished with the eye-tracking part of the experiment, participants were asked to fill in the Qualtrics questionnaire to measure attitudes and purchase intentions. Afterwards they were debriefed about the purpose of the study. Finally, they were thanked for participation and were given 1 credit or 2 euros plus 50 eurocents show up fee. Each participant successfully finished the whole experiment within the expected time of 30 minutes. Every examination took place in the same room with the same setup.

Materials and measures

The material and equipment used for this laboratory experiment consisted of a laptop, a computer screen, a computer mouse, an eye-tracker, informed consent papers, the media material containing images of webpages with banner ads which were programmed in Tobii Studio v3.0.2, and a Qualtrics questionnaire.

Eye-tracker

The Tobii Studio v3.0.2 and the 60 Hz eye-tracker system provided a fast and automatic calibration procedure for each participant. These devices were used to record the following eye-tracking measures: total fixation duration (the total time a participant watched the banner ad), fixation counts (how many fixations were located to the banner ad) and time to first fixation (the time it took for participants to pay attention to the banner ad). Longer fixation duration and more fixation counts indicate more attention, whereas

shorter time to first fixation indicates earlier attention from the participants. Hence, these dependent variables were used as a measure of attention. To obtain these measures, the part of the screen that covers the banner ad, the area of interest, was selected. Participants did not need to wear any device to track their eyes, enabling spontaneous behavior. As one eye-tracker was available at our faculty, only one participant could be tested at a time.

Media material

The media material contained a total of 18 images, programmed in Tobii. For each condition (functional products vs. sensory-social products) nine images were shown in random order. The images depicted a fake webpage related to either functional products (in the functional product condition) or sensory-social products (in the sensory-social product condition). The webpage consisted of an informational text that participants were instructed to read, and a banner ad about a functional product (in the functional product condition; see Appendix A) or a sensory-social product (in the sensory-social product condition; see Appendix B). Based on the study of Bottomley and Doyle (2006), this present study used power tools as functional products, and restaurants and nightclubs as sensory-social products. Fictitious brands were used in the banner ads to avoid prior familiarity. Each color (blue, red, and white) was presented three times, each time with a different product and brand within the product condition. Hence, the combination of product category and color, the congruence, was the independent variable.

Qualtrics questionnaire

The Qualtrics questionnaire for this study contained questions about age and gender, three questions about the website texts for either the functional condition or the sensory-social condition, 99 questions to measure attitude towards the ad and brand, and

purchase intention for the nine banner ads, and a final question about color-blindness. Each banner ad had 11 questions; five questions to measure attitude towards the ad, five questions to measure attitude towards the brand and one question to measure purchase intention. The order of the nine banner ads was randomized in the questionnaire. Attitude towards the ad and the brand was measured using the following five items: 'I think the ad/brand is good', 'I think that the ad/brand is of high quality', 'I like the ad/brand', 'I think the ad/brand is pleasant', and 'I think the ad/brand is favorable'. These items were measured on a 7-point Likert scale ranging from 1 = 'strongly disagree' to 7 = 'strongly agree'. The questions about purchase intention were measured on a 7-point Likert scale ranging from 1 = 'extremely unlikely' to 7 = 'extremely likely', where participants were asked 'what is the likelihood that you would purchase this product in the future?' in the functional condition, and 'what is the likelihood that you would purchase something here in the future?' in the sensory-social condition. Hence, attitude and purchase intention were the dependent variables.

Statistical analysis

The hypothesis that congruence between color and product category will influence attention, attitude towards the ad and brand, and purchase intention, was statistically tested using the software SPSS for Windows version 24.0. All assumptions were checked. All tests were two-sided, and a $p < 0.05$ was considered statistically significant. Congruence was the independent variable, and attention, attitude and purchase intention were the dependent, outcome variables.

Attention

The dependent variable attention was measured with the eye-tracker, by recording the total fixation duration, fixation counts and time to first fixation to the banner ads. A 2x3 mixed ANOVA was used, with product category as the between-factor variable and congruence as the within-factor variable, to determine whether fixation duration was longer, fixation count was higher, and time to first fixation was smaller for the congruent ones (functional products with blue color and sensory-social products with red color) than for the incongruent ones (functional products with red color and sensory-social products with blue color; H1).

Attitude towards the ad and brand

To make the attitude measurements concise, a combined attitude score for the attitude towards the ad and one for the attitude towards the brand was computed by averaging the scores of the five items. A 2x3 mixed ANOVA was used to measure the dependent variable attitude, with product category as the between-factor variable and congruence as the within-factor variable, to determine whether attitude towards the ad and brand was positively/negatively influenced by congruence/incongruence, respectively (H2).

Purchase intention

To measure the dependent variable purchase intention, a 2x3 mixed ANOVA was used, with product category as the between-factor variable and congruence as the within-factor variable, to determine whether purchase intention was positively/negatively influenced by congruence/incongruence, respectively (H3).

Correlations between attention, attitude, and purchase intention

Pearson correlations were used to determine whether fixation duration and fixation counts were positively associated with attitude and purchase intention, whether time to first fixation was negatively associated with attitude and purchase intention (H4), and whether attitude was positively associated with purchase intention (H5), respective to their levels of congruence (congruent, neutral, and incongruent).

Results

Attention

As presented in Table 1, the analysis of the effect of congruence on attention, using a 2x3 mixed ANOVA with product category as the between-factor variable and congruence as the within-factor variable, revealed no significant results. Measurements of attention were total fixation duration, fixation counts and time to first fixation. All three showed no significant results for both the main effects and the interaction. As no main effect was found of congruence on attention, H1 is rejected.

Nevertheless, the main effect of product category and the interaction of congruence and product category for both the total fixation duration ($F(1, 198) = 3.21, p = .076$ and $F(2, 198) = 2.45, p = .089$, respectively) and the fixation counts ($F(1, 198) = 3.78, p = .055$ and $F(2, 198) = 2.80, p = .063$, respectively) were almost significant. The fixation duration in the sensory-social condition ($M = 1.81, SE = .15$) was slightly longer than in the functional condition ($M = 1.44, SE = .15$). The fixation duration in the sensory-social condition was slightly lower for the neutral banner ads ($M = 1.65, SE = .15$) than for the congruent ($M = 1.89, SE = .17$) and incongruent ($M = 1.88, SE = .16$) banner ads. On the contrary, the fixation duration in the functional condition was slightly higher for the neutral

banner ads ($M = 1.50, SE = .15$) than for the congruent ($M = 1.43, SE = .17$) and incongruent ($M = 1.39, SE = .16$) banner ads. In addition, the fixation counts in the sensory-social condition ($M = 7.96, SE = .54$) was slightly higher than in the functional condition ($M = 6.47, SE = .55$). The fixation counts in the sensory-social condition was slightly lower for the neutral banner ads ($M = 7.40, SE = .57$) than for the congruent ($M = 8.42, SE = .63$) and incongruent ($M = 8.07, SE = .59$) banner ads. On the contrary, the fixation counts in the functional condition was slightly higher for the neutral banner ads ($M = 6.71, SE = .57$) than for the congruent ($M = 6.34, SE = .63$) and incongruent ($M = 6.35, SE = .60$) banner ads. This contradicts H1 and will be addressed in the discussion.

Table 1

Mixed ANOVA results with attention as the dependent variable.

	df	<i>F</i>	<i>p</i> -value	Partial Eta Squared
Total fixation duration				
Congruence	2	.50	.607	.005
Product	1	3.21	.076	.031
Congruence * Product	2	2.45	.089	.024
Fixation counts				
Congruence	2	.57	.567	.006
Product	1	3.78	.055	.037
Congruence * Product	2	2.80	.063	.028
Time to first fixation				
Congruence	2	.85	.429	.009

Product	1	.78	.380	.008
Congruence * Product	2	1.25	.289	.012

Note. Df of error = 198.

Attitude towards the ad

As presented in Table 2, the analysis of the effect of congruence on attitude towards the ad, using a 2x3 mixed ANOVA with product category as the between-factor variable and congruence as the within-factor variable, only revealed significance for the interaction of congruence and product category ($F(1.97, 191.11) = 4.52, p = .012$). As Figure 1 shows, the attitude towards the ad formed by the participants in the functional condition, was more positive for the neutral banner ads ($M = 4.17, SE = .11$) than for the incongruent banner ads ($M = 3.94, SE = .10$). An inverse effect was found for the participants in the sensory-social condition, as their attitude towards the ad was more negative for the neutral banner ads ($M = 4.00, SE = .10$) than for the incongruent banner ads ($M = 4.08, SE = .10$). The attitude towards the ad was slightly more positive for the congruent banner ads than for the neutral banner ads, in both the functional condition ($M_{congruent} = 4.20, SE = .11$) and the sensory-social condition ($M_{congruent} = 4.04, SE = .11$). This inverse effect will be addressed in the discussion. However, as no main effect was found of congruence on the attitude towards the ad, the results are not in line with H2.

Table 2

Mixed ANOVA results with attitude towards the ad as the dependent variable.

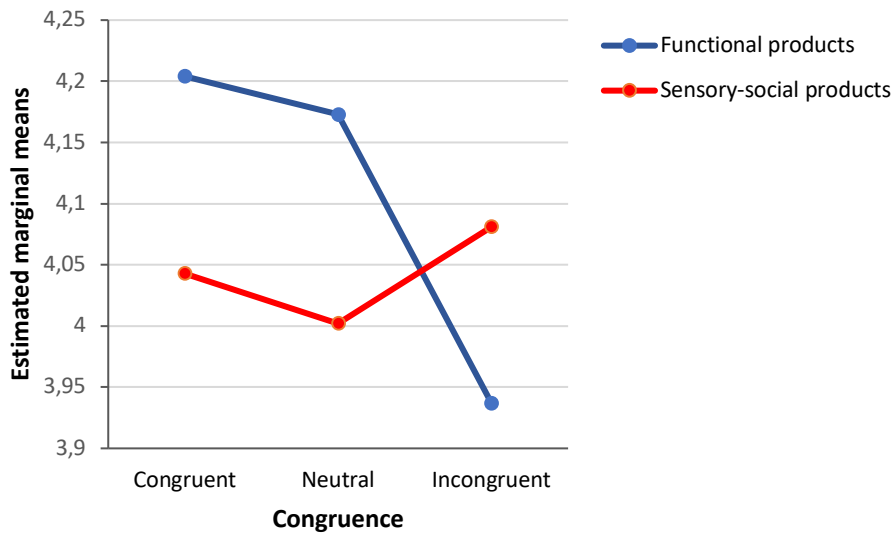
	df	F	p-value	Partial Eta Squared
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Congruence	1.97	1.93	.148	.019
Product	1	.23	.633	.002
Congruence * Product	1.97	4.52	.012	.044

Note. Df of error = 191.11. Bold values signify statistically significant p -values ($p < 0.05$).

Figure 1

Estimated marginal means for the significant effect of the interaction of congruence and product for the dependent variable attitude towards the ad.



Attitude towards the brand

As presented in Table 3, the analysis of the effect of congruence on attitude towards the brand, using a 2x3 mixed ANOVA with product category as the between-factor variable and congruence as the within-factor variable, revealed two significant results. The main effect of congruence ($F(2, 198) = 7.69, p = .001$) and the interaction of congruence and product category ($F(2, 198) = 9.13, p < .001$) showed significance. Specifically, pairwise comparisons with Bonferroni correction for multiple comparisons, showed a significant

difference between the attitude towards the brand for neutral banner ads and the attitude towards the brand for incongruent banner ads ($p < .001$). Participants showed more positive attitudes towards the brand for neutral banner ads ($M = 4.23, SE = .08$) than for incongruent banner ads ($M = 4.03, SE = .07$). However, as no significant difference was found between congruent ($M = 4.15, SE = .08$) and incongruent banner ads, the results are not in line with H2, which will be addressed in the discussion.

The interaction of congruence and product category is shown in Figure 2. The attitude towards the brand formed by the participants in the functional condition, was more positive for the neutral banner ads ($M = 4.39, SE = .11$) than for the incongruent ($M = 3.96, SE = .10$) and congruent ($M = 4.16, SE = .11$) banner ads. An inverse effect was found for the participants in the sensory-social condition, as their attitude towards the brand was slightly more negative for the neutral banner ads ($M = 4.08, SE = .11$) than for the incongruent ($M = 4.09, SE = .10$) and congruent ($M = 4.13, SE = .11$) banner ads. This effect will be addressed in the discussion.

Table 3

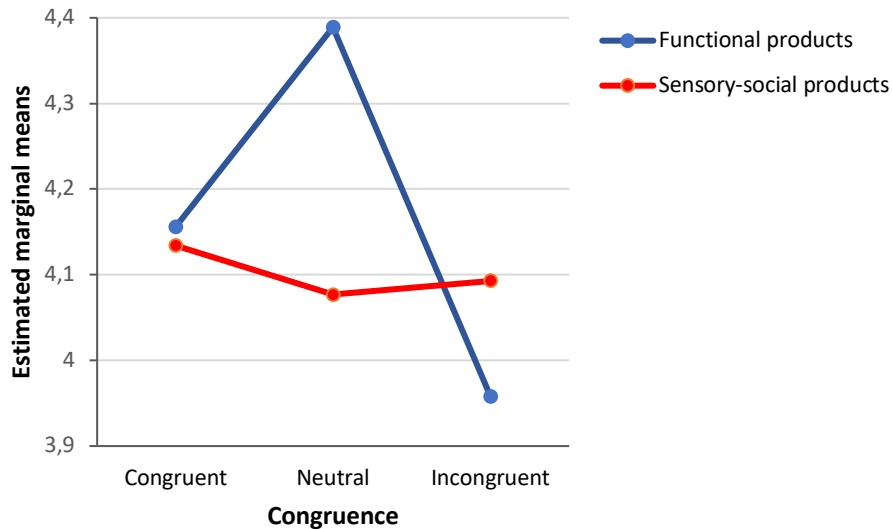
Mixed ANOVA results with attitude towards the brand as the dependent variable.

	df	<i>F</i>	<i>p</i> -value	Partial Eta Squared
Congruence	2	7.69	.001	.072
Product	1	.25	.620	.002
Congruence * Product	2	9.13	< .001	.084

Note. Df of error = 198. Bold values signify statistically significant *p*-values ($p < 0.05$).

Figure 2

Estimated marginal means for the significant effect of the interaction of congruence and product for the dependent variable attitude towards the brand.



Purchase intention

As presented in Table 4, the analysis of the effect of congruence on purchase intention, using a 2x3 mixed ANOVA with product category as the between-factor variable and congruence as the within-factor variable, revealed two significant results. The main effect of congruence ($F(1.66, 164.32) = 5.28, p = .009$) and the interaction of congruence and product category ($F(1.66, 164.32) = 3.83, p = .031$) showed significance. Specifically, pairwise comparisons with Bonferroni correction for multiple comparisons, showed a significant difference between the purchase intention for congruent banner ads and the purchase intention for incongruent banner ads ($p = .011$) and neutral banner ads ($p = .032$). Participants reported a higher purchase intention for congruent banner ads ($M = 3.54, SE = .13$) than for incongruent banner ads ($M = 3.23, SE = .13$) and neutral banner ads ($M = 3.36, SE = .13$).

The interaction of congruence and product category is shown in Figure 3. The purchase intention reported by the participants in the functional condition, was higher for the congruent banner ads ($M = 3.61$, $SE = .19$) than for the neutral banner ads ($M = 3.24$, $SE = .19$), and was higher for the congruent and neutral banner ads than for the incongruent banner ads ($M = 3.03$, $SE = .19$). However, the purchase intention reported by the participants in the sensory-social condition, was the same for both the congruent ($M = 3.48$, $SE = .19$) and the neutral banner ads ($M = 3.48$, $SE = .19$), and nearly the same for the incongruent banner ads ($M = 3.43$, $SE = .19$). Therefore, H3 is only met for the functional product condition, which will be addressed in the discussion.

Table 4

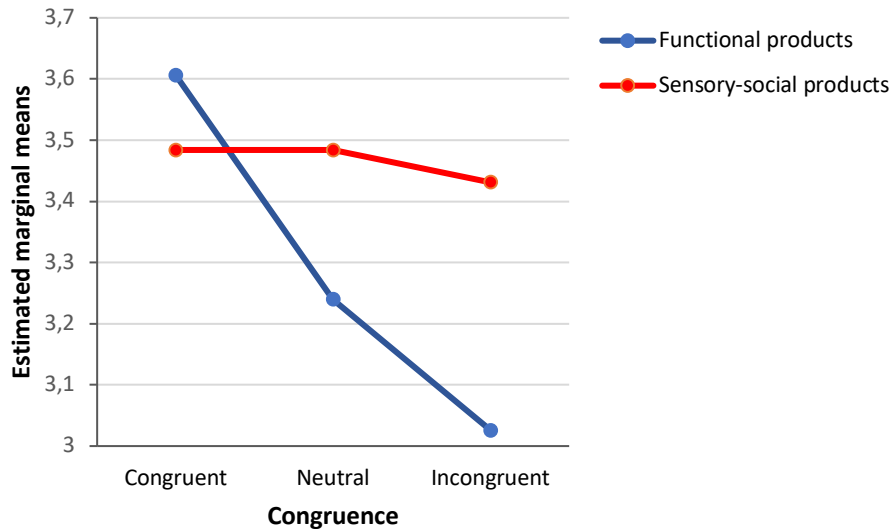
Mixed ANOVA results purchase intention as the dependent variable.

	df	<i>F</i>	<i>p</i> -value	Partial Eta Squared
Congruence	1.66	5.28	.009	.051
Product	1	.54	.465	.005
Congruence * Product	1.66	3.83	.031	.037

Note. Df of error = 164.32. Bold values signify statistically significant *p*-values ($p < 0.05$).

Figure 3

Estimated marginal means for the significant effect of the interaction of congruence and product for the dependent variable purchase intention.



Correlations between attention, attitude, and purchase intention

The Pearson correlations of attention with attitude and purchase intention only revealed a significant positive correlation of time to first fixation for neutral banner ads with their purchase intention ($r(99) = .47, p < .001$), which is not in line with H4 and will be addressed in the discussion.

All the Pearson correlations of attitude with purchase intention showed a significant positive correlation. A significant positive correlation of attitude towards the ad ($r(99) = .54, p < .001$) and attitude towards the brand ($r(99) = .54, p < .001$) for congruent banner ads with purchase intention was found. In addition, a significant positive correlation of attitude towards the ad ($r(99) = .47, p < .001$) and attitude towards the brand ($r(99) = .45, p < .001$) for neutral banner ads with purchase intention was found. Also, a significant positive correlation of attitude towards the ad ($r(99) = .48, p < .001$) and attitude towards

the brand ($r(99) = .52, p < .001$) for incongruent banner ads with purchase intention was found. These results are completely in line with H5.

Furthermore, as expected, a significant positive correlation between attitude towards the ad and attitude towards the brand was found for the congruent ($r(99) = .79, p < .001$), neutral ($r(99) = .84, p < .001$), and incongruent ($r(99) = .79, p < .001$) banner ads. Additionally, as expected, a significant positive correlation between fixation duration and fixation counts was found for the congruent ($r(99) = .93, p < .001$), neutral ($r(99) = .94, p < .001$), and incongruent ($r(99) = .95, p < .001$) banner ads.

Discussion

As the banner advertising industry is still growing, and as color and congruence are important elements that contribute to the efficacy of banner ads, the aim of this study was to identify whether congruence between color and product category in banner ads positively influences banner ads' efficacy. It was assumed that congruent banner ads, compared to incongruent banner ads, grab more attention and are positively associated with attitude and purchase intention. Furthermore, it was assumed that attention is positively associated with attitude and purchase intention, and that attitude is positively associated with purchase intention. Most results of this study did, however, not support these hypotheses.

No effect was found for congruence between color and product category on attention and attitude towards the ad. However, almost significant effects were found for the product category and the interaction of congruence and product category for both the fixation duration and the fixation counts. Participants paid slightly more attention to the banner ads for sensory-social products than to the banner ads for functional products, which

may suggest that sensory-social products are more attractive than functional products. Besides, participants paid slightly more attention to neutral banner ads than to congruent and incongruent banner ads for functional products, whereas participants paid slightly less attention to neutral banner ads than to congruent and incongruent banner ads for sensory-social products. In addition, the influence of congruence on attitude towards the ad was inverted for the product categories. The attitude towards the ad was more positive for neutral banner ads than for incongruent banner ads for functional products, whereas the attitude towards the ad was more positive for incongruent banner ads than for neutral banner ads for sensory-social products. This might suggest that for functional products, neutral banner ads influence the attention and attitude towards the ad more positively than incongruent banner ads. Further, congruence did have an effect on attitude towards the brand, as the attitude towards the brand was more positive for neutral banner ads than for incongruent banner ads in the functional condition. Hence, white banner ads, compared to red banner ads, for functional products positively influenced the attitude towards the brand. Also, the results revealed an effect of congruent banner ads on purchase intention in the functional condition. Blue banner ads, compared to white and red banner ads, for functional products positively influenced purchase intention and thus the banner ads' efficacy. These findings seem contradictory, as for functional products, the neutral banner ads generated the most positive attitude towards the brand, while the congruent banner ads generated the highest purchase intention. Yet, for functional products, congruent and neutral banner ads do influence the banner ads' efficacy more positively than incongruent banner ads. Future research could investigate whether banner ads for functional products consisting of both blue and white have an even more positive influence on the banner ads' efficacy. Moreover,

it is surprising that congruence only seemed to have an effect on banner ads for functional products, while congruence did not seem to have an effect on banner ads for sensory-social products. Hence, the type of color in banner ads may not be really relevant for sensory-social products, since most people are attracted to these kinds of products anyway, such as having dinner in a restaurant. Or perhaps other elements in banner ads are more important for sensory-social products. Also, as functional products satisfy the needs for problem solving and as sensory-social products satisfy the needs for pleasure (Park et al., 1986), functional products could stimulate rational thinking, whereas sensory-social products could stimulate emotional thinking. Congruence between color and product category might have more effect on rational consumers than on emotional consumers. This could be investigated in future research.

Further, as assumed, positive associations were found between attitude towards the ad, attitudes towards the brand, and purchase intention for congruent, neutral and incongruent banner ads. Still, no associations were found between attention and attitude towards the ad and brand, and only one positive association was found between time to first fixation and purchase intention for neutral banner ads. It thus seems that the longer it took for participants to look at the neutral banner ads, the higher the purchase intention, which was not expected. However, previous research found mixed results on the association between attention and purchase intention. It is found that participants who are engaged in another task that occupies their attention, such as reading a text, do not attentively process the ad. This incidental ad exposure, which implies that an ad receives minimal attention when other information is being processed, may have potential implicit positive effects on purchase intention due to priming effects, evaluative conditioning

processes or mere exposure effects (Auty & Lewis 2004; Baker, 1999; Sauerland, Felser, & Krajewski, 2012; Shapiro et al., 1997). As these findings suggest that more attention is not necessary to increase purchase intention, they could explain the unexpected results of this study. Due to this ambiguity, the association between attention and purchase intention should be further investigated in different advertising contexts, for example across various types of congruence. In addition, time to first fixation was not associated with total fixation duration and fixation counts, suggesting that time to first fixation is another type of attention than fixation duration and fixation counts. Shorter time to first fixation indicates earlier attention, whereas longer fixation duration and more fixation counts indicates more attention. The present study findings suggest that shorter time to fixation is not correlated with longer fixation duration and more fixation counts. The difference between these types of attention can be further investigated.

Overall findings of this study were not in line with most previous studies on the effect of congruence on attention, attitude towards the ad and the brand, and purchase intention (Luan et al., 2018; Porta et al., 2013; Rieger et al., 2015; Pradhan et al., 2016; Ruth, 2001; Wright, 2016; Zhang et al., 2019). Also, the positive association of attention with attitude and purchase intention suggested in other studies (Janiszewski, 1998; Lohse, 1997; Scheier, 2003; Thorson et al., 1992), was not found in this study. However, this study did contribute to prior research, by confirming the positive association between attitude towards the ad and brand, and purchase intention, and by revealing the mentioned inconsistent results that could be further investigated. In addition, this present study contributes to the knowledge on banner ads, as it was the first to investigate the effect of

the congruence between color and product category in relation to attention, attitude towards the ad and brand, and purchase intention.

The strengths of the present study are the use of an eye-tracker that assessed three different measures of attention, and the combination of these attention measurements with other variables used to measure the efficacy of ads. Besides, a control condition was included using a neutral color, and fictitious brands were invented to prevent familiarity. Also, participants were randomly assigned to a condition and the same gender ratio was taken into account for both conditions, the banner ads were shown in random order, and the order of banner ads was randomized in the questionnaire, aiming to reduce sources of bias. In addition, this study included two types of congruence between color and product category. Further, several banner ads with different products and brands were used per congruence level, for better generalization of the results.

Although showing multiple banner ads to the participants could be beneficial for generalization of the results, it might as well be considered a limitation. Multiple banner ads with the same type of product presented in a short time may have been too difficult for participants to tell apart, causing them to lose track of which brand name belonged to which banner ad. Especially the sensory-social products could have been too difficult to tell apart, as this study only included restaurants and nightclubs. Different restaurants or nightclubs can be harder to tell apart than different power tools that were used as functional products. This might also explain why the current study findings were not completely as expected and were different for the sensory-social condition than for the functional condition. Future studies could replicate this current study using a modified procedure, for example by measuring the attitude towards the ad and brand, and purchase intention after each banner

ad rather than after all the banner ads, or by presenting only one banner ad per congruence level. Another limitation of the present study is that most participants were Leiden University students with little variation in age. Besides, the gender distribution is unequal, with 71% of the participants being female. This may have consequences for generalization of the present study findings, as it appears that males have a more positive attitude towards online advertising and have a higher purchase intention than females (Wolin & Korgaonkar, 2003).

Therefore, further research is recommended involving a more even gender distribution and a greater variety among participants in terms of age, education and profession. Research into the congruence between other colors and other product categories is also recommended, for instance investigation of the congruence between the color green and healthy foods. In addition, their influence on the banner ads' efficacy, as well as the associations between variables to measure the banner ads' efficacy could be examined. Besides, the effect of color combination within a banner ad can be investigated, as most brands use multiple colors (e.g. McDonald's uses red and yellow). Further, replication of this study is necessary to confirm the present study findings.

In conclusion, based on this experimental study, we can conclude that congruence between color and product category appear to have no influence on attention and attitude towards the ad and brand. Yet, it does have a positive influence on the purchase intention of functional products. Hence, marketers might consider implementing blue colors in banner ads for functional products, such as power tools, to positively influence the banner ads' efficacy.

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Appendix A

Website with banner ads in the functional condition

Figure A1

Webpage with a congruent banner ad in the functional condition.

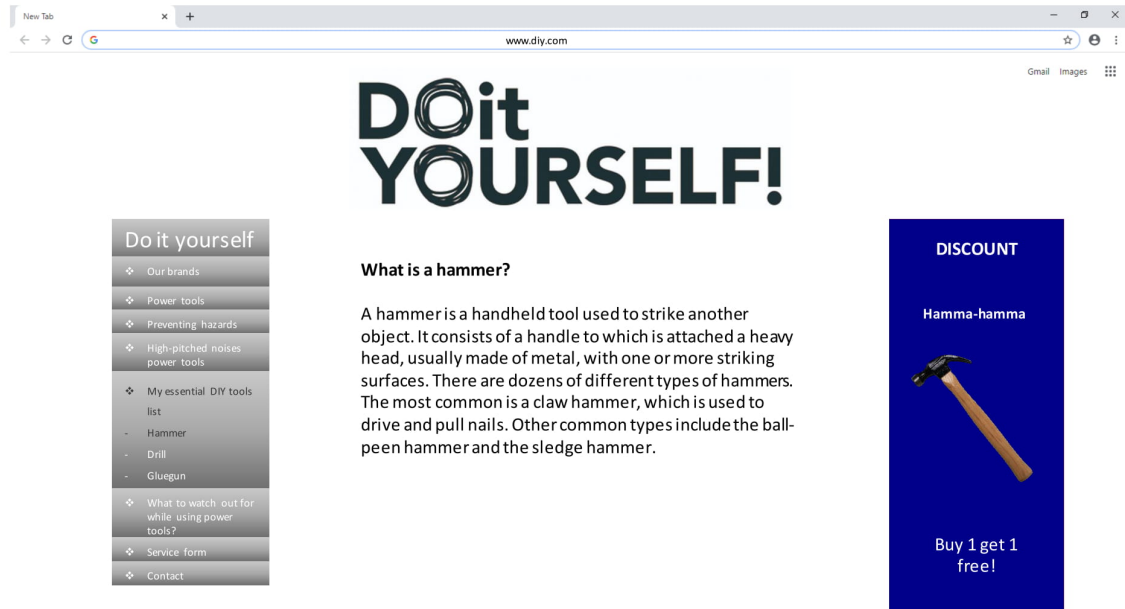


Figure A2

Webpage with an incongruent banner ad in the functional condition.

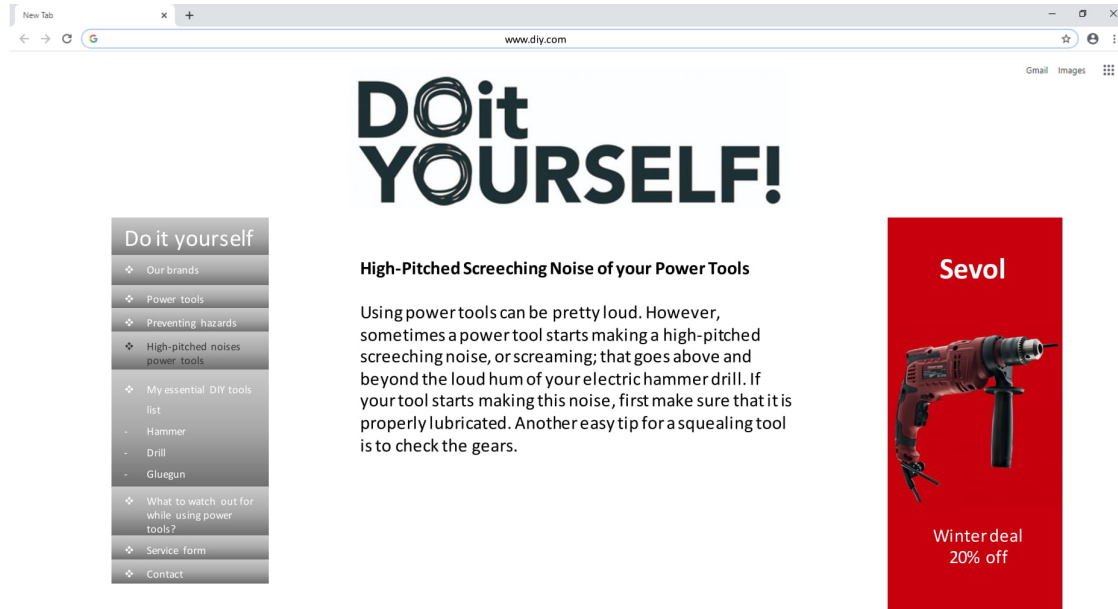
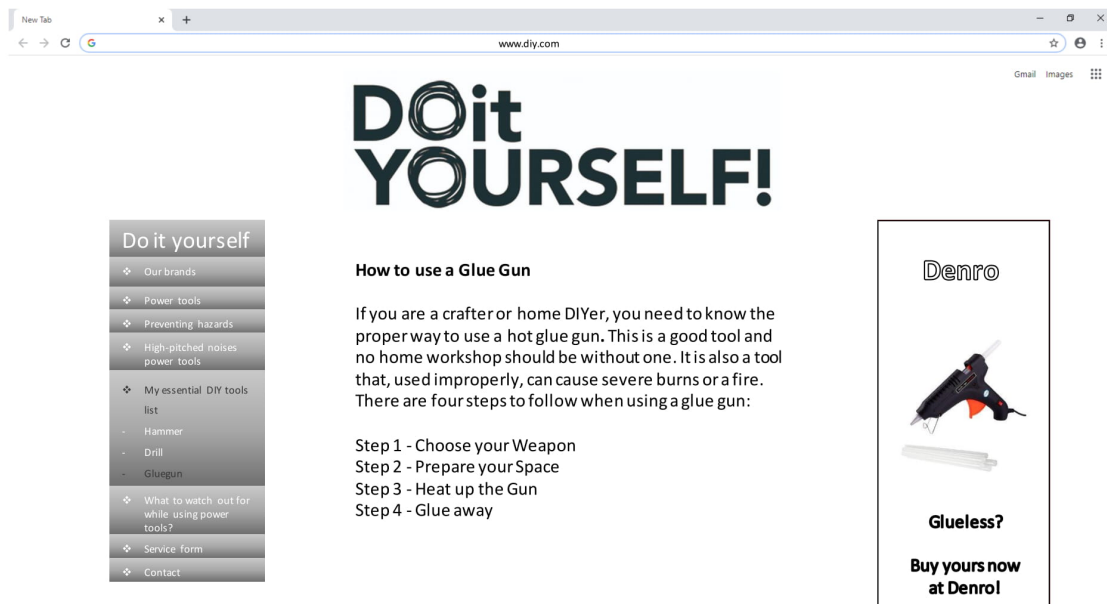


Figure A3

Webpage with a neutral banner ad in the functional condition.



Appendix B

Website with banner ads in the sensory-social condition

Figure B1

Webpage with a congruent banner ad in the sensory-social condition.

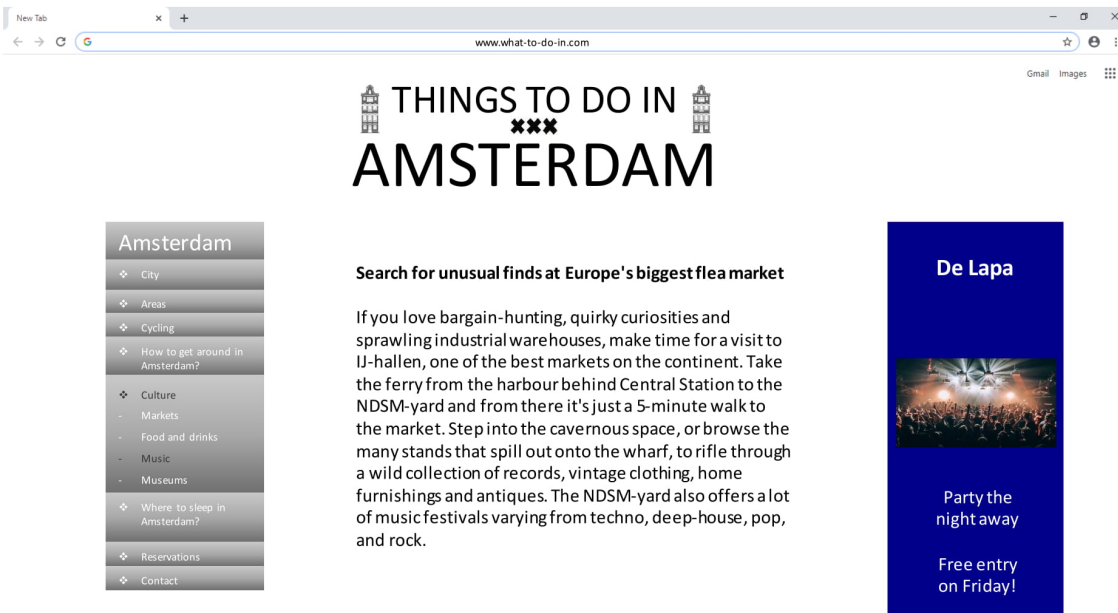


Figure B2

Webpage with an incongruent banner ad in the sensory-social condition.

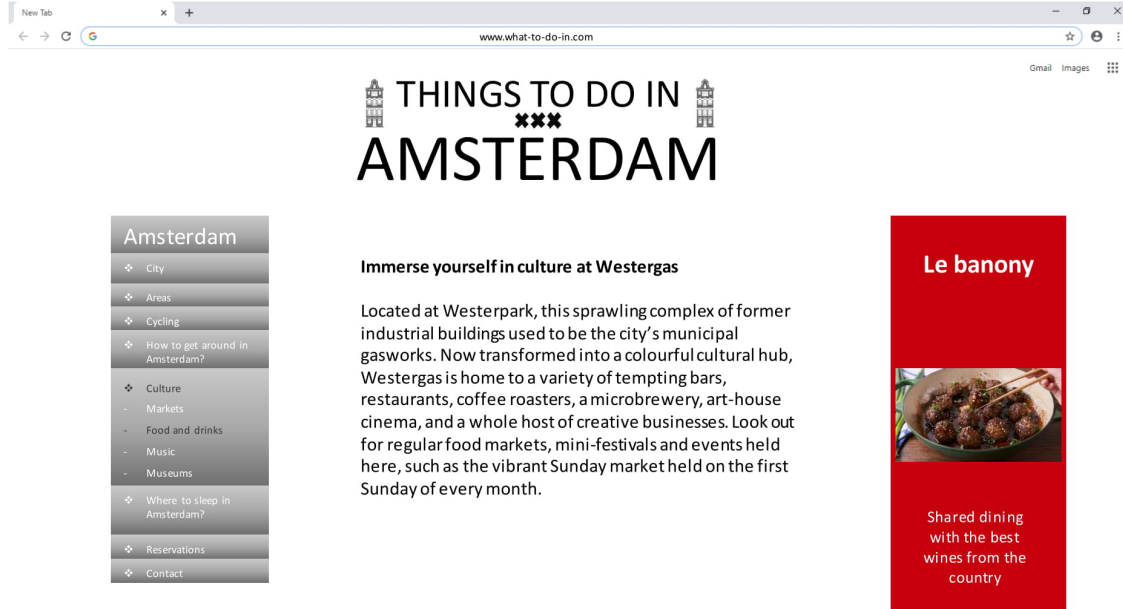


Figure B3

Webpage with a neutral banner ad in the sensory-social condition.

