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Websites in brand communication: interactivity and cross-media effects

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Publication date
2010

[Link to publication](#)

Citation for published version (APA):

Voorveld, H. A. M. (2010). *Websites in brand communication: interactivity and cross-media effects*.

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Opening the Black Box: Understanding Cross-Media Effects⁵

Abstract

Despite their popularity, the reasons why cross-media campaigns are more successful than single medium campaigns are still unknown. Therefore, the aim of this study is (a) to investigate which psychological processes are present when people are exposed to cross-media campaigns, and (b) to examine to what extent these processes contribute to campaign results. Three psychological processes are investigated to gain insight into the effectiveness of cross-media campaigns: forward encoding (i.e., the ad in the first medium primes interest in the ad in the second medium); image transfer (i.e., mentally replaying the ad previously viewed during exposure to the ad in the second medium); and multiple source perception (i.e., believing the brand is good and popular because of the amount of advertising). To identify the role of these processes, 219 participants were exposed to one of four media conditions (two cross-media conditions and two repeated media conditions). The results showed that two processes were present when participants were exposed to the cross-media combinations: forward encoding and multiple source perception. We also found support for the hypothesis that these two processes contributed to campaign results. However, the third process, image transfer was present in all conditions and did not add to the explanation of cross-media effects.

⁵ This chapter is accepted for publication as: Voorveld, H. A. M., Neijens, P. C., & Smit, E. G. (in press). Opening the black box: Understanding cross-media effects. *Journal of Marketing Communications*.

The authors would like to thank the two anonymous reviewers and the editor for their valuable suggestions.

Introduction

Synergy is considered an important concept in the marketing and advertising literature. It may even be said that it is the ultimate goal of most marketing communication campaigns. Synergy occurs when the combined effect of multiple marketing communication activities exceeds the sum of their individual effects (Naik & Raman, 2003). Synergy can be created by Integrated Marketing Communication (IMC) (Moriarty, 1996; Schultz, 2005). Without involving in the ongoing debate concerning the conceptual foundation and formal definition of IMC (Kitchen Brignell, Li, & Jones, 2004; Schultz & Kitchen, 2000; Lee & Park, 2007; Cornelissen & Lock, 2000), we will simply describe it as: "having all marketing communication efforts speak with one voice" (Wang and Nelson, 2006, p 110; Schultz, 1993; Prensky, McCarty, & Lucas, 1996).

One of the many aspects connected to the concept of IMC is the use and coordination of multiple media in one campaign (Thorson & Moore, 1996; McGrath, 2005). In so called multimedia campaigns or cross-media campaigns, marketers seek to maximize the effectiveness of their budgets by exploiting the unique strengths of each medium. Important issues for advertisers using multiple media are how media interact and how each medium contributes to the effects of the campaign.

Several studies have investigated these cross-media issues in the past. Most of these studies focused on the effectiveness of cross-media campaigns compared to single medium campaigns. Generally, among researchers there is some consensus that cross-media campaigns reveal more positive audience reactions than campaigns using only one medium (e.g., Edell & Keller, 1989, 1999; Dijkstra, 2002; Naik & Raman, 2003; Dijkstra, Buijtel, & Van Raaij, 2005; Chang & Thorson, 2004; Bronner, 2006). Still unanswered is the question why cross-media campaigns are more effective than single medium campaigns. Although some cross-media studies implicitly assume that certain mechanisms or psychological processes can explain the more positive effects of cross-media campaigns (Edell & Keller, 1989; Keller, 1996), the influence of the mechanisms has almost never been tested. Only one unpublished study of Dijkstra (2002) sheds some first light on this topic.

The aim of our study is to fill this gap in earlier research by investigating the validity of three potential processes that may occur when people see cross-media campaigns and that may account for the effects of these campaigns. On the basis of these processes, we formulate three hypotheses. Each of these hypotheses attributes the effect of cross-media campaigns to a different underlying process. By empirically testing the validity of the underlying mechanisms, we contribute to a more profound understanding of

the phenomenon. The central research question is: which psychological processes are present when people are exposed to cross-media campaigns, and to what extent do these processes contribute to cross-media effects?

After developing our hypotheses, an experiment will be presented in which a combination of websites and TV commercials is used to investigate the role of three underlying processes (forward encoding, image transfer, and multiple source perception). The combination of TV commercials and websites is chosen for two reasons. First, this combination is mostly used within media planning, as shown by its expenditures (ZenithOptimedia, 2009). Second, only two studies have systematically investigated the effectiveness of cross-media campaigns that use a combination of TV commercials and websites (Dijkstra, 2002; Chang & Thorson, 2004).

The Development of Hypotheses

Based on some of the theoretical assumptions of earlier cross-media studies, we identify three psychological processes that can potentially be stimulated by exposure to cross-media campaigns. These three processes are the processes that are mentioned in academic work on this topic and may explain why cross-media campaigns result in more positive campaign results, such as attitude toward the ad, attitude toward the brand, and purchase intention (Vakratsas & Ambler, 1999). These well-known advertising effect measures are further described in the method section.

Forward Encoding

The first psychological process that we study is forward encoding. Forward encoding takes place when an ad in the first medium 'primes' the consumer's interest for and attention to an ad in the second medium. This interest may stimulate deeper processing and easier encoding of the second ad (Dijkstra, 2002). In other words, the ad in the first medium may serve as a 'teaser' to attract attention to, arouse interest in, and increase curiosity for the ad in the second medium (Bronner, Neijens, & Van Raaij, 2003; Edell & Keller, 1989, 1999; Dijkstra, 2002). In terms of priming, the ad in the first medium acts as a prime for the ad in the second medium. The ad in the first medium, 'the prime' affects or facilitates subsequent responding to the ad in the second medium, 'the target' (e.g., Bargh & Chartrand, 1999; Logan, 1989; Abad, Noguera, & Ortells, 2003).

The explanation of the forward encoding process is as follows. When people see an ad for the first time, an ad memory trace is stored (Keller, 1987). When people are exposed to the same or a related ad in another medium, the ad

memory trace will influence information processing of the subsequent ad. Forward encoding probably stimulates encoding processes during exposure to the second ad. Especially when the second ad is presented in another medium, the first ad may have evoked curiosity and expectations about the second ad and this may motivate deeper processing of the second ad. When the second ad is an exact copy of the first ad, people will be less motivated to process the second ad (Dijkstra, 2002), which is in line with the differential attention explanation (Unnava & Burnkrant, 1991). The differential attention hypothesis assumes that the level of attention to repeated information declines, because people recognize that they are exposed to the same information, which results in low levels of motivation and a lack of interest in the ad. Thus, we believe that forward encoding may be more prevalent when people are exposed to cross-media campaigns than when they are exposed to single medium campaigns.

In her unpublished study, Dijkstra (2002) showed some preliminary evidence that forward encoding was higher in cross-media campaigns than in single medium campaigns. She examined the presence of forward encoding in the processing of cross-media campaigns by asking participants whether they became more or less interested in the second ad after seeing the first ad. The levels of forward encoding in her study were higher in some cross-media conditions than in conditions where participants were exposed to the same medium twice.

Edell and Keller (1989, 1999) did not explicitly measure the presence and role of forward encoding. However, they inferred afterwards from thought listing results that forward encoding could have been present in some cross-media conditions. In some cross-media conditions, participants reported more often that they were curious about the second ad, compared to participants who saw the same ad twice. The first ad acted as a teaser and increased the participants' motivation to view the second ad (Keller, 1996).

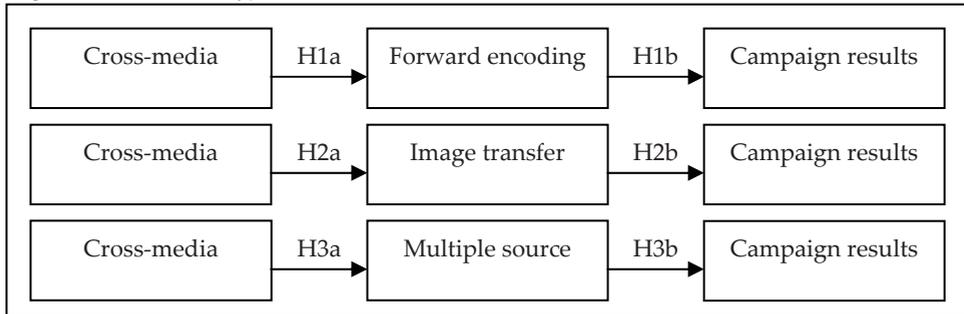
Our first hypothesis attributes the positive effect of cross-media campaigns on campaign results to enhanced forward encoding. We believe that a higher level of forward encoding results in more attention to the second ad and more motivation to process the second ad. Although deeper processing of the second ad could also lead to more counter-arguing, we believe deeper processing leads to more positive effects (Dijkstra, 2002; Edell & Keller, 1989; Keller, 1996). This expectation is based on the encoding variability principle (Melton, 1967). The encoding variability principle states that information presented in varied contexts, like media, is encoded in a slightly different way, which results in improved memory performance (Young & Bellezza, 1982; Unnava & Burnkrant, 1991). Improved memory performance may result in

positive effects, because not only the brand name is stored in memory, but also brand benefit beliefs, influenced by positive information about the brand in the ads. Thus, in our case forward encoding would result in deeper processing and easier encoding of the cross-media campaign than of the single medium campaign. The resulting multiple retrieval cues could indirectly influence the evaluation of the ads and the brand.

H1: (a) Exposure to a campaign which uses two different media results in more forward encoding than a campaign that utilizes repeated exposure to the same medium, which (b) enhances campaign results.

This first hypothesis is visualized in Figure 1.

Figure 1. *The three hypotheses visualized.*



It should be noted that our expectation that cross-media campaigns would result in more positive campaigns results than single medium campaigns is in contrast with the mere exposure hypothesis (Zajonc, 1968). The mere exposure hypothesis postulates that individuals develop positive evaluations due to mere exposure when they are repeatedly exposed to the same stimulus. However, we believe that in our case the wear-out phase would be achieved very fast in the single medium campaigns due to the fact that our respondents see the ads almost immediately after each other.⁶

Image Transfer

Image transfer is the second psychological process we study. Image transfer is present when consumers imagine or mentally replay the previously viewed ad during exposure to the second ad. The process is based on the encoding specificity principle (Tulving & Thomson, 1973) from cognitive psychology. Basically, this principle states that memory is improved when cues

⁶ We would like to thank one of the reviewers for this interesting explanation

available at encoding are also present at retrieval. For cross-media campaigns, this means that during image transfer “the elements in the second ad may function as retrieval cues to the ad memory trace from the first exposure” because of overlap between the ad executions (Dijkstra, 2002, p. 66). Other authors described the same process as a retrieval process (Edell & Keller, 1989, 1999; Bronner et al., 2003). When the second ad is presented in a different medium, the second ad may serve as a retrieval cue to the stored memory trace (Edell & Keller, 1989) and people remember the previous ad during exposure to the second ad. When people are exposed to the same medium twice, there is no need to retrieve information from the first ad memory trace because it is easier to process the same ad again (Dijkstra, 2002). Thus, we believe that image transfer may be more prevalent when people are exposed to a combination of media than when they are repeatedly exposed to the same medium.

The difference between forward encoding and image transfer is related to one of the most principal issues in theory of memory: the storage or retrieval of memory traces (Melton, 1963 in Tulving & Thomson, 1973). While forward encoding primes the interest in the ad the second medium and thus is related to encoding and storage, image transfer affects the retrieval of information from the ad in the first medium, during exposure to the second medium. So, while forward encoding is a forward, storage process, images transfer is a backward, retrieval process.

In her study, Dijkstra (2002) showed preliminary evidence for the presence of the image transfer process by asking participants which words or images of the first ad came to their minds when watching the second ad. Higher levels of image transfer were observed in some cross-media conditions when compared to repeated media conditions.

Edell and Keller (1989) did not explicitly test the presence and role of the image transfer process. In their study, however, they inferred that image transfer must have been highest in cross-media conditions. Their interpretation was based on thought listing results. In some cross-media conditions participants reported having more thoughts concerning certain parts of the first ads than in single medium conditions.

Our second hypothesis attributes the positive effect of cross-media campaigns on campaign results to enhanced image transfer. Mentally replaying the first ad while exposed to the second ad may lead people to more actively process the information which may result in more positive campaign results (Dijkstra, 2002; Edell & Keller, 1989; Young & Bellezza, 1982). This hypothesis is also visualized in Figure 1.

H2: (a) Exposure to a campaign which uses two different media results in more image transfer than a campaign that utilizes repeated exposure to the same medium, which (b) enhances campaign results.

Multiple Source Perception

The third psychological process that we study is multiple source perception. An advertising message with multiple sources may make it more convincing and more credible, since acquiring information from different sources can enhance the persuasive power of the message because the different media are seen as independent sources (Harkins & Petty, 1981, 1987; Bronner et al., 2003; Gotlieb & Sarel, 1991).

Moreover, the economic signaling theory (Nelson, 1974) provides further support for the position that cross-media campaigns lead to more positive results than single medium campaigns. The economic signaling theory holds that consumers infer the brand quality of unfamiliar brands from advertising repetition. Consumers see repetition as costly and assume high expenditures to be an indication of the firm's confidence in the product quality (Kirmani, 1997). Extending the line of thinking of this theory a little further, we hold that consumers perceive cross-media campaigns as more expensive than repetitive campaigns. However, the existence of people's multiple source perceptions from cross-media combinations has never been examined, nor has its influence on campaign results been proven.

Our third hypothesis attributes the positive effect of cross-media campaigns on campaign results to an enhanced multiple source perception. We assume that the belief that a brand has to be good and popular because of the level of advertising in multiple media also results in other more positive campaign results (Dijkstra, 2002). The third hypothesis, visualized in Figure 1, states:

H3: (a) Exposure to a campaign which uses two different media results in more multiple source perceptions than a campaign that utilizes repeated exposure to the same medium, which (b) enhances campaign results.

Method

Design and Participants

A four (TV commercial-website, website-TV commercial, website-website, TV commercial-TV commercial) factorial between-subject design was used to investigate the processes. Two cross-media conditions (Web-TV and

TV-Web) were compared with two repeated medium conditions (Web-Web and TV-TV). Participants were 219 students of a large Dutch university who were recruited in one of the buildings of the Faculty of Social and Behavioral Sciences. Participation was voluntary and the participants each received €8. The mean age was 22.16 ($SD = 3.36$) and 71.2% of the participants were female.

Experimental Stimuli

Each participant evaluated one brand. Two different product categories were used in this experiment to make the results more generalizable: dairy and clothing. Half of the participants evaluated an ad for a dairy brand and half evaluated an ad for a fashion brand. In order to avoid any pre-experimental bias that might influence the level of information processing (Blair & Innis, 1996), Belgium brands and commercials were used in this experiment. The brands were not advertised in the Netherlands and none of the participants had seen the ads before. All TV commercials were in Dutch and all commercials were about 30 seconds. The TV commercials mainly focused on giving product information and showed people using and enjoying the products.

Two websites –one for each brand– were professionally created with the same structure and lay-out, and a variation in the content only. The specific text, photos and logos of each website were copied from the real website of the brands. The websites contained corporate, brand, product, and background information, photos, and the possibility to request more information. Both websites contained 22 sub-pages and had the same amount of information.⁷

TV commercials were shown in blocks of five commercials (one target ad and four filler ads) to create a natural viewing environment. The target commercial was counterbalanced and shown at the second or third position in the commercial block to eliminate the influence of possible primacy and recency effects (Pieters & Bijmolt, 1997). The websites were not offered in blocks of five because on the internet it is more common to go directly to the desired website. Participants were asked to browse the website in their usual manner. Participants had an unlimited amount of time to view the website.

Procedure

Participants were randomly assigned to one of the four media exposure conditions. Two conditions contained both the website and the TV commercial; one condition had an initial TV exposure, followed by a website exposure and the other condition had an initial exposure to the website followed by the TV

⁷ Copies of the experimental stimuli are available upon request

commercial. One condition had two exposures to the website and one condition had two exposures to the TV commercial.

Participants sat in isolated cubicles to avoid them from viewing and hearing the ads in the other conditions of the experiment. The experiment was conducted on a computer. First, participants were asked some general questions. Then participants were exposed to the ads (TV commercial or website, depending on the media condition) for the first time. After this, participants were exposed to a five-minute fragment of a Dutch TV soap. Then participants were exposed for a second time to the TV commercial or website. Finally, participants were asked to complete the questionnaire. It took about 30 minutes to complete the experiment. When participants were finished they were thanked and debriefed.

Measures

Processes

To measure the psychological processes, we used a thought recognition task which is similar to the tasks described by Huang and Hutchinson (2008) and Cacioppo, Von Hippel, and Ernst (1997). The most important advantage of thought recognition over the more traditional thought listing is that thought recognition is generally a more sensitive measure than recall (Huang & Hutchinson, 2008; Gardiner, 1988; Johnston, Dark, & Jacoby, 1985). The reason why is because “by providing a more specific memory cue that is related to the hypothesized cognitive response, it should benefit from (...) a close fit between processing at encoding and retrieval” (Huang & Hutchinson, 2008, p. 99). The measures of the three processes are described below.

Forward encoding. Forward encoding was measured with three items, partly based on Dijkstra (2002): “I became more interested in the second ad after seeing the first ad.”; “I wanted to know more about the brand after seeing the first ad.”; and “I wanted more information about the brand after seeing the first ad.” Response categories ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). These items all loaded on one factor that proved to be reliable ($EV = 2.21$; $R^2 = 74$; Cronbach’s alpha = .81; $M = 2.94$, $SD = 0.94$).

Image transfer. Image transfer was measured by asking participants to indicate which image or words from the first exposure came to mind during the second exposure. They could do this by choosing from a list of pre-selected words and/ or images. For every word or image participants had to indicate whether it came to their minds or not. Response categories were 1 (*yes*), and 0 (*no*). One score was acquired by calculating the percentage of images or words

that were checked compared to the total words and images that were listed ($M = 44.76$, $SD = 20.87$).

Multiple source perception. Multiple source perception was measured with three items (Dijkstra, 2002). Items included: "I thought it must be a popular brand."; "I thought this brand is very believable."; and "I thought it must be a good brand because it spends a lot of money on advertising." Response categories ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The items all loaded on one factor that proved to be reliable ($EV = 1.86$; $R^2 = .62$; Cronbach's alpha = .69; $M = 2.89$, $SD = 0.80$).

Effects

Attitude toward the website and the TV commercial. Attitude toward the website and the TV commercial was measured with a four-item five-point semantic differential scale used in Chang and Thorson (2004). The bipolar ends included "likeable/not likable," "interesting/not interesting," "good/bad," and "appealing/not appealing." The items all loaded on one factor that proved to be reliable (Attitude toward the website: $EV = 2.91$; $R^2 = .73$; Cronbach's alpha = .87; $M = 3.02$, $SD = 0.86$; Attitude toward the TV commercial: $EV = 3.36$; $R^2 = .94$; Cronbach's alpha = .93; $M = 3.62$, $SD = 0.99$).

Attitude toward the brand. The same items that were used to measure the attitudes toward the website and the TV commercial were used, but now they were applied to the brand. These items all loaded on one factor that proved to be reliable ($EV = 2.96$; $R^2 = .74$; Cronbach's alpha = .88; $M = 3.41$, $SD = 0.84$).

Purchase intention. Purchase intention was measured with a two-item 5-point Likert scale. The response categories ranged from 1 (*very improbable*) to 5 (*very probable*). Subjects were asked how likely they were to buy the product and how likely they were to recommend it to a friend (Boulding, Kalra, Stealin, & Zeithaml, 1993). All items loaded on one factor that proved to be reliable ($EV = 1.61$; $R^2 = .81$; Cronbach's alpha = .76; $M = 2.78$, $SD = 1.04$).

Other measures

General attitude toward advertising. Five items of the scale of Smit and Neijens (2000) were used to measure the participants' general attitude toward advertising. Items included: "For me, advertising is amusing." and "Advertising has no credibility" (reversed). Response categories ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The items loaded on one factor that proved to be reliable ($EV = 2.51$; $R^2 = .50$; Cronbach's alpha = .75; $M = 3.22$, $SD = 0.65$).

Product category experience. Product category experience was measured according to three items established by Beaty and Talpade (1994).

One example is: "I have a lot of experience with this product." Response categories ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). These items loaded on one factor that proved to be reliable ($EV = 2.56$; $R^2 = .85$; Cronbach's alpha = .91; $M = 3.38$, $SD = 0.97$).

Ad familiarity. Respondents were asked whether they saw the TV commercial and/or the website before. Response categories were: 1 (*no*), 2 (*yes, maybe*), 3 (*yes*), with an extra 'do not know' option.

Results

Design Checks

Two respondents reported awareness of one of the TV commercials or websites used in the experiment; these respondents were excluded from the data set. The missing data was replaced by group mean values (Tabachnick & Fidell, 1996). Statistics showed that participants' gender was similar across conditions ($\chi^2(3, N = 219) = 2.46, p = .48$). The four conditions did not differ with respect to age, $F(3, 215) = 0.86, p = .47$, general attitude toward advertising, $F(3, 215) = 1.92, p = .13$, and product category experience, $F(3, 215) = 0.17, p = .92$. This implies that differences in the groups regarding the dependent variables cannot be caused by differences in these background variables.

To give a more comprehensive overview of the results, we checked whether the two cross-media conditions (TV-Web and Web-TV) differed significantly from each other with regard to the three processes and the effect measures. No differences were found. These two conditions were therefore combined into one cross-media condition. In contrast, some differences existed between the two repeated medium conditions and therefore we analyzed these conditions separately.

Mediation Analyses

In order to test whether the three processes contributed to campaign results, we followed the three-step procedure described by Baron and Kenny (1986). In the first step, we investigated whether the cross-media condition was related to the three processes identified in our hypotheses (H1a, H2a, H3a). This required a regression of the independent variable (media conditions) on the three processes (i.e., forward encoding, image transfer, and multiple source perception). The three media conditions were included as two dummy variables with the cross-media condition as a reference category (Hardy, 1993).

In the second step, our independent variable (media conditions) was regressed on the campaign results measures (attitude toward the TV

commercial, attitude toward the website, attitude toward the brand, and purchase intention). This was done to test whether there was a direct effect of the media conditions on these dependent variables. Although we did not formulate hypotheses about these direct relationships, this step is required to investigate the contribution of the three processes to the campaign results.

In the third step, we investigated the actual contribution of the processes to the campaign results (H1b, H2b, H3b). We regressed both the process and the independent variables on the dependent variables. Two conditions must be met to conclude that a process contributes to the campaign results (Baron & Kenny, 1986). First, there should be a significant influence of the process variable on the dependent variable. Second, the direct effect of the independent variable on the dependent variable should no longer be significant, or should still be insignificant. To provide a statistical test for the size and strength of these indirect effects, we tested the significance with the formula developed by Sobel (1982). An online version of this test developed by Preacher and Leonardelli (2005) was used.

Role of Forward Encoding

Hypothesis 1a stated that exposure to the cross-media combination would result in more forward encoding than exposure to repeated media conditions. Table 1 shows that this hypothesis was only supported when we compared the TV-TV condition with the cross-media condition ($\beta = -.14, p < .05$). Exposure to the cross-media condition resulted in more forward encoding ($M = 2.96, SD = 0.94$) than the repeated exposure to the TV commercial ($M = 2.65, SD = 0.96$). Hypothesis 1a is therefore partially supported.

Table 1. Results of three regression analyses with processes as dependent variable

X	Y	B	SE	β
TV-TV vs. Cross-media (d)	Forward encoding	-.30	.16	-.14*
Web-Web vs. Cross-media (d)		.23	.15	.11
TV-TV vs. Cross-media (d)	Image transfer	17.72	3.33	.36***
Web-Web vs. Cross-media (d)		9.38	3.24	.19**
TV-TV vs. Cross-media (d)	Multiple source	-.21	.13	-.11
Web-Web vs. Cross-media (d)		-.50	.13	-.27***

Note. X = independent variable; Y = dependent variable; d= Dummy coded, with the cross-media condition as reference category. * $p < .05$, ** $p < .01$, *** $p < .001$, all one-tailed.

Because the forward encoding hypothesis was only valid when the cross-media condition was compared to the TV-TV condition, we used this comparison to examine whether forward encoding also contributed to campaign results. Table 2 shows that there was only a direct effect on the participant's attitude toward the TV commercial ($\beta = -.14, p < .05$). People in the cross-media condition had a more positive attitude toward the TV commercial ($M = 3.71, SD = 0.94$) than people who saw the TV commercial twice ($M = 3.42, SD = 1.07$). For the other campaign results there were no differences between people who saw the TV commercial twice and those who saw both a website and a TV commercial.

Table 2 also shows that forward encoding had a positive influence on all three campaign results (attitude toward the TV spot: $\beta = .43, p < .001$; attitude toward the brand: $\beta = .36, p < .001$; purchase intention: $\beta = .36, p < .001$). The Sobel test statistics yielded significant indirect effects on all three effect measures (brand attitude: $z = -1.83, p = .03$, one-tailed; purchase intention: $z = -1.83, p = .03$, one-tailed; attitude toward the TV commercial $z = -1.83, p = .03$, one-tailed). Hypothesis 1b is therefore supported.

Table 2. Summary of regression analyses for influence of media condition and forward encoding on campaign results

	X	Y	B	SE	β
(1)	TV-TV vs. Cross-media (d)	Attitude TV spot	-.30	.17	-.14*
(2)	TV-TV vs. Cross-media (d)	Attitude TV spot	-.17	.15	-.08
	Forward encoding		.45	.07	.43***
(1)	TV-TV vs. Cross-media (d)	Attitude brand	-.21	.14	-.11
(2)	TV-TV vs. Cross-media (d)	Attitude brand	-.12	.13	-.06
	Forward encoding		.32	.06	.36***
(1)	TV-TV vs. Cross-media (d)	Purchase intention	-.19	.17	-.08
(2)	TV-TV vs. Cross-media (d)	Purchase intention	-.07	.16	-.03
	Forward encoding		.40	.07	.36***

Note. X = independent variable; Y = dependent variable; d= Dummy coded, with the cross-media condition as the reference category (0) * $p < .05$, ** $p < .01$, *** $p < .001$, all one tailed. The first row displays the direct effect of the dummy variable on the campaign result (first regression analysis). The second and third rows display the combined effect of the dummy variable and the process variable on the campaign results (second regression analysis).

Role of Image Transfer

Hypothesis 2a predicted that exposure to the cross-media condition would result in more image transfer than exposure to repeated media conditions. Table 1 shows that the differences found were contrary to our expectations. The levels of image transfer in the TV-TV condition ($\beta = .36, p < .001, M = 56.13, SD = 20.50$) and the Web-Web condition ($\beta = .19, p < .01, M = 47.48, SD = 18.80$) were higher than in the cross-media condition ($M = 38.40, SD = 19.65$). Hypothesis 2a is therefore rejected.

Against our expectations, the level of image transfer was lowest in the cross-media condition. This excluded this process as a valid explanation for the effectiveness of cross-media campaigns. Consequently, this process will not be used in further analyses.

Role of Multiple Source Perception

Hypothesis 3a proposed that exposure to the cross-media condition would result in more multiple source perceptions than exposure to the repeated media conditions. Table 1 shows that this hypothesis was only supported when we compared the cross-media condition with the Web-Web condition ($\beta = -.27, p < .05$). Exposure to the cross-media condition resulted in an increase in multiple source perceptions ($M = 3.07, SD = 0.81$) as compared to a repeated exposure to the website ($M = 2.56, SD = 0.62$). Hypothesis 3a is therefore partially supported.

The multiple source hypothesis was only valid when the cross-media condition was compared to the Web-Web condition. Therefore we used this comparison to examine whether multiple source perceptions also contributed to campaign results (see Table 3).

Table 3 shows that there were three direct effects of the experimental conditions on the campaign results. People in the cross-media condition had a more positive attitude toward the brand ($\beta = -.24, p < .001, M = 3.58, SD = 0.80$) and a higher purchase intention ($\beta = -.20, p < .001, M = 2.94, SD = 0.99$) than people who saw the website twice (respectively $M = 3.12, SD = 0.80$ and $M = 2.46, SD = 1.08$). In contrast, people who saw the website twice had a more positive attitude toward that website ($\beta = .22, p < .01, M = 3.29, SD = 0.79$) than people who saw the website and the TV commercial ($M = 2.89, SD = 0.87$).

Table 3 also shows that multiple source perception contributes to a more positive attitude toward the brand and purchase intention. The Sobel test statistics also yielded significant values (brand attitude: $z = -3.67, p = .00$, one-tailed; purchase intention: $z = -3.69, p = .00$, one-tailed). Hypothesis 3b is therefore supported.

Table 3. Summary of regression analyses for influence of media condition and multiple source perception on campaign results

	X	Y	B	SE	β
(1)	Web-Web vs. Cross-media (d)	Attitude website	.40	.14	.22**
(2)	Web-Web vs. Cross-media (d)	Attitude website	.56	.14	.30***
	Multiple source		.32	.08	.29***
(1)	Web-Web vs. Cross-media (d)	Attitude brand	-.46	.16	-.24***
(2)	Web-Web vs. Cross-media (d)	Attitude brand	-.16	.12	-.08
	Multiple source		.60	.08	.58***
(1)	Web-Web vs. Cross-media (d)	Purchase intention	-.48	.17	-.20***
(2)	Web-Web vs. Cross-media (d)	Purchase intention	-.16	.16	-.07
	Multiple source		.63	.06	.49***

Note. X = independent variable; Y = dependent variable; d= Dummy coded, with the cross-media condition as the reference category (0) * $p < .05$, ** $p < .01$, *** $p < .001$, all one tailed. The first row displays the direct effect of the dummy variable on the campaign result (first regression analysis). The second and third rows display the combined effect of the dummy variable and the process variable on the campaign results (second regression analysis).

In summary, the processes of forward encoding and multiple source perception contributed to the results of the cross-media campaigns. Forward encoding explained differences between the TV-TV and the cross-media condition. Multiple source perception explained different campaign results between the Web-Web and the cross-media condition.

Conclusion and Discussion

The aim of this study is to have a better understanding of the processes underlying cross-media effects. The study shows that two processes were more prevalent when people were exposed to cross-media combinations than when people were exposed to repeated media conditions. The first process is forward encoding. Exposure to the cross-media condition resulted in more forward encoding than a repeated exposure to the TV commercial. Subsequently, the higher level of forward encoding affected the participant's attitude toward the brand, attitude toward the TV commercial, and purchase intention. In other words, there was an indirect effect of medium type on the campaign results

through forward encoding when comparing the conditions with or without exposure to the website.

The second process that was more prevalent when people were exposed to the cross-media combination than when they were exposed to the repeated media conditions is multiple source perception. Exposure to the cross-media condition resulted in more multiple source perceptions than repeated exposure to the website. Subsequently, the level of multiple source perceptions resulted in a more positive attitude toward the brand and an increase in the purchase intention in the cross-media condition than in the Web-Web condition. In other words, multiple source perception provided an explanation for the different campaign results of the conditions with or without exposure to the TV commercial. There was a full mediation, when multiple source perception was added to the equation, the direct effect of the medium type on attitude toward the brand and purchase intention disappeared.

The last process, image transfer was not more prevalent when people were exposed to the cross-media condition when compared to the repeated media conditions. Both repeated media conditions evoked more image transfer than the cross-media condition.

Our study provides evidence of the necessity of incorporating the two cross-media processes – forward encoding and multiple source perception– in cross-media theories. Although Edell and Keller (1989) and Dijkstra (2002) already speculated about the presence of these processes, our study is the first that explicitly and convincingly shows that the positive effects of cross-media campaigns on campaign results can be attributed to forward encoding and multiple source perception.

Next to these conclusions our study also reveals some unexpected results. First, we expected that forward encoding would only be present in the cross-media condition. Although exposure to the cross-media condition did result in more forward encoding than repeated exposure to the TV commercial, surprisingly, forward encoding was also present in the Web-Web condition. Thus, at least one exposure to the website was necessary for forward encoding. A possible explanation could be that a website is more complex than a TV commercial and too complex to fully process with only one exposure. Related to this complexity is the fact that the second exposure to the website could have been different than the first exposure. The reason is that an exposure to the website is internally paced; consumers are in control, they decide which parts of the website they want to view (Florès, 2004). Our study suggests that we need to include the complexity of the medium in theories on media effects. It was shown that forward encoding processes were not only important for cross-

media campaigns, but also for repeated single medium campaigns if the medium is a complex medium.

The second unexpected finding concerns the fact that although multiple source perception was highest in the cross-media condition it was also present in the TV-TV condition. Thus, at least one exposure to the TV commercial was needed to increase multiple source perception, which is in line with the findings of Dijkstra (2002). We can therefore conclude that TV commercials have a higher status or prestige than websites, maybe because people think that it is very expensive to produce and broadcast a TV commercial, while websites are seen as a rather cheap marketing communication instrument.

A third unexpected finding concerns the direct effects of media conditions on campaign results. We supposed that a combination of a website and a TV commercial performed better than the repeated exposure to a TV commercial or the repeated exposure to a website. However, the study showed that in some cases the TV-TV condition performed as good as the cross-media condition. In these cases there was only an indirect effect via multiple source perception on campaign results. Thus, the status or prestige of a medium should be incorporated in campaign theories. The study showed that TV commercials are predominant in determining campaign results and that multiple source perception provided a good explanation for this dominance.

A last unexpected finding concerns the presence of image transfer. Image transfer was not higher when people were exposed to the cross-media condition as compared to the repeated media conditions. On the contrary, both repeated media conditions evoked more image transfer than the cross-media condition. There are two competing explanations for the absence of this process in the cross-media condition. First, the measurement of this process could have been problematic because we asked participants afterwards what they experienced during exposure to the ads. It might have been difficult for participants to answer these questions. The second explanation might be that, in contrast to our theoretical assumption (based on Edell & Keller, 1989; Dijkstra, 2002; Bronner, 2006), there is still a need to think of earlier exposures when people are repeatedly exposed to the same ad.

Limitations and Future Research

This study has made important contributions, but its findings need to be viewed with their limitations in mind. First, the results are dependent on the two specific websites and TV commercials that were used for this study. Further evidence for the processes found in this study should be acquired by new studies using other websites and TV commercials. In addition, it would

also be interesting to investigate differences between product categories, for example between high and low involvement products.

Second, the participants in the study are not necessarily representative of all consumers. The young, highly educated student sample could have been more familiar with the use of the internet and navigating websites than a representative sample of the Dutch population. Nevertheless, although convenience samples are problematic for the estimation of univariate statistics, they are still valid to establish initial relationships between variables (Bogaert, 1996).

A third limitation is the usage of the four effect measures: attitude toward the TV commercial, the website, and the brand, and purchase intention. According to the hierarchy of effects theory (Lavidge & Steiner, 1961) consumers pass through multiple steps from their initial exposure to the ad to their purchase decision. In our study we did not recognize the sequence of these steps and treated all four effect measures the same. The reason is that our study did not focus on the effectiveness of cross-media campaigns but on processes that could explain the effects.

The fourth issue concerns the measurement of the three processes: forward encoding, image transfer, and multiple source perception. Although the use of thought recognition tasks to measure cognitive responses to advertisements is celebrated in a recent article in by Huang and Hutchinson (2008), the measurement could have been somewhat problematic. We asked participants afterwards what they experienced during their exposure to the ads, which might have been difficult for some participants to answer.

A last issue concerns two possible confounding effects. The first concerns using TV commercials in a block of five, while exposing our participants to only one website. In our experiment we have deliberately chosen to use commercials in a block of five to create a natural viewing situation. Although we do not expect that this issue has strongly influenced our results, future research could replicate this study by using only one TV commercial. A second confounding effect concerns the fact that in our study we have not only changed the media exposure but also the variation in type of information. In the cross-media condition participants saw slightly different information in the TV commercial and on the website, while participants in the single-medium conditions saw exactly the same information twice. Future research might therefore replicate the current study, by using two slightly different TV ads and two slightly different websites instead of two identical TV commercials or websites in the single medium conditions.

Another important avenue for further studies is expanding the application of the processes to other cross-media combinations and IMC in general. It would be interesting to know whether the same processes play a role when people are exposed to different marketing communication forms, for example publicity and advertising. It would also be interesting to study cross-media campaigns using longitudinal designs, because advertising campaigns usually run for longer periods and because cross-media effects and cross-media processes might be different with increased levels of exposure. Finally, future research might study the influence of the degree of fit between the TV commercial and the website. Bronner (2006) argues that this last factor could be a key factor in explaining the success of cross-media campaigns.

Managerial Implications

Our study provides advertisers with some valuable insights. Now we know that forward encoding and multiple source perception play a crucial role in the superior effects of cross-media campaigns in comparison to single medium campaigns, advertisers can try to stimulate the occurrence of these processes. Advertisers could, for example, stimulate overlap between ad executions or increase curiosity to stimulate forward encoding. They could also encourage the use of TV commercials to provoke multiple source perceptions.

Our study also provides advertisers knowledge on the effectiveness of cross-media campaigns. The study showed that the cross-media condition performed better than the repeated media conditions for three out of four dependent variables but two exposures to a TV commercial did not result in a less positive attitude toward the brand and purchase intention than the cross-media condition. Thus, from a marketing perspective, the use of cross-media campaigns can bring a substantial financial gain because the costs of building and hosting a website are lower than the costs of frequently transmitting a TV commercial.

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