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A first step in unraveling synced advertising effectiveness

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ABSTRACT
Technological developments and the rise of mobile devices have made it possible to deliver personalized messages to consumers based on their concurrent media usages in real time; this is known as synced advertising. Synced advertising is argued to be an effective personalized advertising strategy in a multi-media environment that will result in more positive brand attitudes compared to those arising from exposure to non-synced advertising. The aim of this research was to examine the effect of synced advertising on brand attitudes. An online experiment (N $=$ 119) and a lab experiment (N $=$ 107) showed that synced advertising resulted in more positive brand attitudes than when users had no exposure to the brand. However, we did not find any differences in brand attitudes depending on having a tablet ad shown before, simultaneous to, or after a TV commercial for the same brand. Thus, the results show that synchronizing ads with a short delay is as effective as synchronizing ads in real time.

Introduction

Globally, digital advertising spending surpassed television spending since 2017 (Statista 2017), and mobile is expected to account for 50 percent of digital ad spending by 2021 (Statista 2019). This is not surprising because the majority of people own a smartphone; they have them with them most of the time and use them regularly (Pew Research Center 2018). Also, mobile devices offer interesting, new opportunities for data collection (Federal Trade Commission 2013) relating to location and behavior. This makes mobile devices a promising platform for sending personalized messages. Finally, mobile devices are often used in combination with other media such as radio and television (Nielsen 2018); in fact, some studies found positive effects on brand attitude when consumers used multiple media simultaneously (e.g., Bellman et al. 2017; Kazakova et al. 2016). With the increasing popularity of mobile devices and the emerging opportunities associated with them, the rise of a new mobile message strategy, synced advertising, is inevitable.

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Synced advertising is a relatively new data-driven, mobile message strategy that has been widely adopted in some countries, such as the Netherlands (Kantrowitz 2014) but has yet to be examined with academic empirical research. Synced advertising is a form of personalized mobile communication in which messages on mobile devices are synced with consumers' current media usage in real time (Segijn 2019), such as when ads shown on mobile devices are for the same brands simultaneously watched in television commercials. This strategy is different from other personalized or data-driven message strategies (e.g., online behavioral advertising [OBA]) in that personalized messages are based on people's current rather than past media behaviors. Despite the potential of synced advertising and the popularity of mobile advertising, little is known about the effects of this new strategy on message effectiveness, such as those relating to brand attitude.

Drawing on the findings from other fields in communication and advertising (e.g., cross-media advertising and media multitasking), it can be argued that synced advertising can have positive effects on brand attitudes compared to those which are realized from non-synced advertising, conventional mobile advertising, and no exposure to advertising. A salient feature of synced advertising that may account for this effect is the increased chance of repeated exposure to related messages on multiple media. Earlier research in advertising has illustrated the importance of repetition (e.g., Cacioppo and Petty 1989; Batra and Ray 1986; Schmidt and Eisend 2015). The possibility of repeating overlapping messages simultaneously on different platforms has become even more important in the multi-media environment in which multiple media and messages are concurrently competing for attention (Brasel and Gips 2011; Segijn et al. 2017).

The aim of this research is to show preliminary evidence of the effect of synced advertising on brand attitudes, a key variable in the field of advertising research. To the best of our knowledge, this is the first academic study that empirically examines attitudinal effects of synced advertising. The study advances our theoretical knowledge by drawing on the elements from cross-media and the media multitasking literature, and combining them in new ways. This will increase our understanding of synced advertising and help connect it to existing theories on persuasion. Additionally, by conducting two studies with different designs the study provides methodological insights on studying this new phenomenon. Practically, the proposed study will raise advertisers' awareness of the effectiveness of synced advertising and may offer new advertising opportunities for broadcasters as well. This study will inform future decisions on whether advertisers should invest in this new advertising strategy. Finally, the findings may inform federal regulations concerning new mobile message strategies; insights about the impact of the phenomenon may lead to adjustments in regulations or increased awareness on the part of consumers regarding this strategy.

Theoretical background

Conceptualization of synced advertising

We will start with conceptualizing synced advertising before discussing how synced advertising could positively affect brand attitudes. Synced advertising is "the practice

of monitoring people's current media behaviour and using the collected information to show people individually targeted ads based on people's current media behaviour across media" (Segijn 2019, p. 59). An example of synced advertising is the showing of messages on a mobile device that also show concurrently on television or radio. This is not a coincidence; various techniques can be used to sync messages among media (Segijn 2019). For example, watermarking is a technique whereby a sound from television or radio is picked up by an application (app) on a mobile device. This can be any mobile app; the primary purpose of the app does not need to be recognizing sound signals and the mobile app user may not necessarily be aware of this feature of the mobile app. However, by downloading and accepting the user terms and conditions, users give permission for the apps to "listen" and collect data on the other media present in the environment surrounding the mobile device. Other strategies involve social media analytics (i.e., tracking popular hashtags to know what people are watching/listening), advanced segmentation technique (Segijn and van Ooijen 2020), and geofencing for outdoor advertisements (Rodriguez Garzon and Deva 2014).

Synced advertising is part of the trend of message personalization such as OBA. However, three key differences between OBA and synced advertising include the timing of the messages, the media, and message coordination. First, the timing of personalized messages is different because, unlike OBA that uses the information on people's *past* media behavior (Boerman, Kruikemeier, and Zuiderveen Borgesius 2017), synced advertising uses the information on people's *current* media behavior for personalizing messages (Segijn 2019). Second, synchronizing ads in real time is only possible when multiple media are present at the same time. Therefore, people are most likely be exposed to a synced advertisement in a multi-media environment (Segijn 2019). Finally, the multi-media environment and synced messages facilitate an environment in which messages can be coordinated in a way that they overlap (Duff and Segijn 2019).

Having repetitive messages on multiple media at the same time may be beneficial to message senders because they increase the chance of exposure to the message. This is especially the case for messages presented in a highly competitive environment and in a visual modality only, such as with a synced ad on a mobile device. In a multi-media environment, visual attention is often divided among the media (Brasel and Gips 2011; Segijn et al. 2017). When consumers devote their visual attention to one medium, they may miss the (visual) message presented in the other media. Therefore, repeating messages on multiple media increases the chance of exposure because, irrespective of the medium to which attention is devoted, any one of the messages will eventually be seen. In the next part, we will discuss how this affects brand attitudes.

Synced advertising and Brand attitudes

Synced advertising not only increases the opportunity for exposure, it also offers the opportunity for *repeated* exposure. This increased opportunity of repeated exposure is likely to be a key factor driving the effectiveness of synced advertising with regard to brand attitudes. The effects of repetition on attitudes have been an important research topic in the past with key papers, for example, from Krugman (1972), Tellis (1997), and

Pechmann and Stewart (1988). The results of a more recent meta-analysis empirically confirmed that repeated exposure to an advertised message can be an effective strategy for enhancing brand attitude (Schmidt and Eisend 2015). More specifically, the meta-analysis showed an inverted U-shaped course of effect with a maximum level of 10 exposures. This means that the course of the repetition effect is initially positive and that it increases until around 10 exposures. At that point, familiarity and learning are saturated and additional exposures would lead to boredom and negative thoughts. After this point, attitude decreases and the course of the effect becomes negative. This would mean that synced advertising would lead to more positive attitudes than non-synced advertising simply because people are exposed more often to a certain brand. However, the positive impact of synced advertising on brand attitude may even go beyond this "simple" repetition effect. Further theoretical explanations for why synced advertising would influence brand attitudes can be found in the cross-media literature as well as in the media multitasking literature.

Synced advertising from a cross-media perspective

The cross-media literature is focused on the uses and effects of advertising messages in different media and how the coordinated use of different media in a campaign influences consumers' responses toward a brand. An example would be when a brand buys advertising space in different media (e.g., TV, social media, and print) for the same campaign. Over the years, academics and practitioners came to the conclusion that cross-media campaigns generally produce more positive results than single-medium campaigns, also for brand attitudes (e.g. Assael 2011; Chang and Thorson 2004; Edell and Keller 1989; Naik and Raman 2003; Stammerjohan et al. 2005; Vandeberg et al. 2015; Voorveld, Neijens, and Smit 2011; Voorveld 2011; Naik and Peters 2009). Whereas cross-media advertising is usually studied as the strategic usage of multiple media over a longer campaign period, synced advertising may be seen as a special case in which media are combined around a particular media consumption moment of a particular media user. Multiple explanations for the positive relationship between exposure to ads in multiple media and brand attitudes can be derived from the cross-media literature; it is likely that these are also applicable to synced advertising.

First, the idea of multiple source perception indicates that consumers perceive different media as independent sources. Thus, when a message is presented in different media, it appears that different sources are telling the same story. This increases the credibility of the message and, therefore, consumers are more likely to accept it (Harkins and Petty 1981a; Voorveld, Neijens, and Smit 2011). Similarly, the repetition-variation theory suggests that a repeated message in multiple media yields more positive affective reactions compared to a message that is shown repetitively in the same medium (Gibson 1996; Stammerjohan et al. 2005; Yaveroglu and Donthu 2008).

Second, different explanations are given that refer to different forms of memory reinforcement (Edell and Keller 1989). People may mentally replay the ad in the first medium when they are exposed to the ad in the second. This is referred to as image transfer or radio replay (Edell and Keller 1989; Dijkstra, Buijtels, and van Raaij 2005;

Voorveld, Neijens, and Smit 2011). The other way around, 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" (Voorveld, Neijens, and Smit 2011, p. 70). This is referred to as forward encoding or priming (Edell and Keller 1989; Voorveld, Neijens, and Smit 2011).

Third, the positive impact of synced advertising on brand attitudes can also be derived from research into other forms of message variation. A repeated message has been found to be more effective when variations of the same message are presented rather than simply repeating the original message (Harkins and Petty 1981b). Research into the presentation of repeated messages in single versus multiple sources showed that a message that is presented in different versions in multiple sources will result in more message elaboration, compared to when a message is shown in different versions in a single source or the same version in multiple sources (Harkins and Petty 1981a). In other words, when consumers are exposed to different versions of a single advertising message in different media, which is the case for synced advertising, elaboration might increase, with a positive influence on brand attitude.

Finally, the differential attention theory stresses the importance of multiple versions of a single advertising message. This theory suggests that attention decreases when it is exposed to the same message multiple times. Thus, inattention can be reduced by offering variations of the same message (Unnava and Burnkrant 1991; Yaveroglu and Donthu 2008). Therefore, different versions of a single message will increase attention to the message which can eventually lead to more positive brand attitudes. This is likely to be the case in a multi-media environment where multiple messages compete for attention such as with synced advertising.

Synced advertising from a media multitasking perspective

The literature on media multitasking – or multiscreening/second screening – is useful for making inferences about the potential effects of synced advertising on consumers' attitudes and more specifically on whether synced ads should be shown simultaneously or whether a brief delay between the ads in two media is as effective. Media multitasking is defined as two or more tasks that are carried out simultaneously of which at least one involves media (Lang and Chrzan 2015). The results of two recent meta-analyses on media multitasking have shown that having overlapping tasks when multitasking results in more positive affective persuasive outcomes (Segijn and Eisend 2019; Jeong and Hwang 2016). For example, when consumers answer text messages or tweet about what they are watching on television, they have more attention to the TV content, are more involved, and therefore will have more positive brand attitudes compared to those who answer text messages or tweet about something else (Segijn, Voorveld, and Smit 2017). In a similar vein, research has showed that sequential exposure to ads with some sort of overlap in execution positively contributes to brand attitudes (Voorveld and Valkenburg 2015). In line with these findings, we expect that synced advertising – in which overlapping messages are presented – will result in more positive brand attitudes.

In short, we rely on theories derived from the cross-media literature and media multitasking literature as a framework to examine the effect of synced advertising on brand attitude. Both streams of literature predict that overlapping messages and the repetition of ads in multiple media are beneficial for brand attitudes. In line with these theories, it can be argued that synced advertising yields more positive brand attitudes than non-synced advertising. To this end, we formulate the following hypothesis:

H1. Consumers who are exposed to a synced advertisement will have more positive brand attitudes compared to consumers who are exposed to a non-synced advertisement.

Method study 1

Sample

An online experiment was conducted to test the hypothesis. Data were collected through Amazon Mechanical Turk (MTurk); this is an online platform that has been shown to collect reliable data in the domains of advertising and social science research (Buhrmester, Kwang, and Gosling 2011; Kees et al. 2017). U.S. citizens 18 years and older could participate in the study. In total, 200 participants completed the study. In total, 52 participants were excluded because of technical issues (i.e., video did not play, text was not visible, or they completed the study on a smartphone). In addition, 29 participants were excluded because they failed multiple attention checks, including two questions to ask a specific answer category, an instructional manipulation check (Oppenheimer, Meyvis, and Davidenko 2009), answer of the open ended questions, and self-reported attention to anything unrelated to the research[1].

The final sample consisted of 119 participants (Age: $M = 38.02$, $SD = 12.46$; 48.7% female; one participant did not disclose their gender). Half the participants (50.4%) had completed their undergraduate education; 29.4% had finished high school; and 19.3% held graduate or higher degrees. One participant did not disclose information about their education. Furthermore, 84% of the participants were White/Caucasian; 7.6% were Black, African, or African-American; 5.9% were Hispanic/Latino; 5% were Asian; 2.5% were American Indian/Alaska Native; 0.8% were Arab/Middle Eastern; and 0.8% were Native Hawaiian or Other Pacific Islander[2].

Design and procedure

The experiment consisted of a single-factor, between-subjects design with four conditions (Figure 1), namely a synced-advertising condition ($n = 32$), a non-synced advertising condition ($n = 28$), and two single tasking conditions ($n = 32$ and $n = 27$). In all the conditions, the participants were exposed to an online news article in which a banner was placed. In the synced advertising and non-synced advertising condition, the participants also watched a branded video. The text and the video were displayed on a split-screen, in which the text was presented on the left side of the screen and the video on the right. This is a common method used in previous multitasking literature (e.g., van Cauwenberge et al. 2014; Wang et al. 2012). In the single tasking conditions, the space of the video was empty. The difference between the synced and non-synced
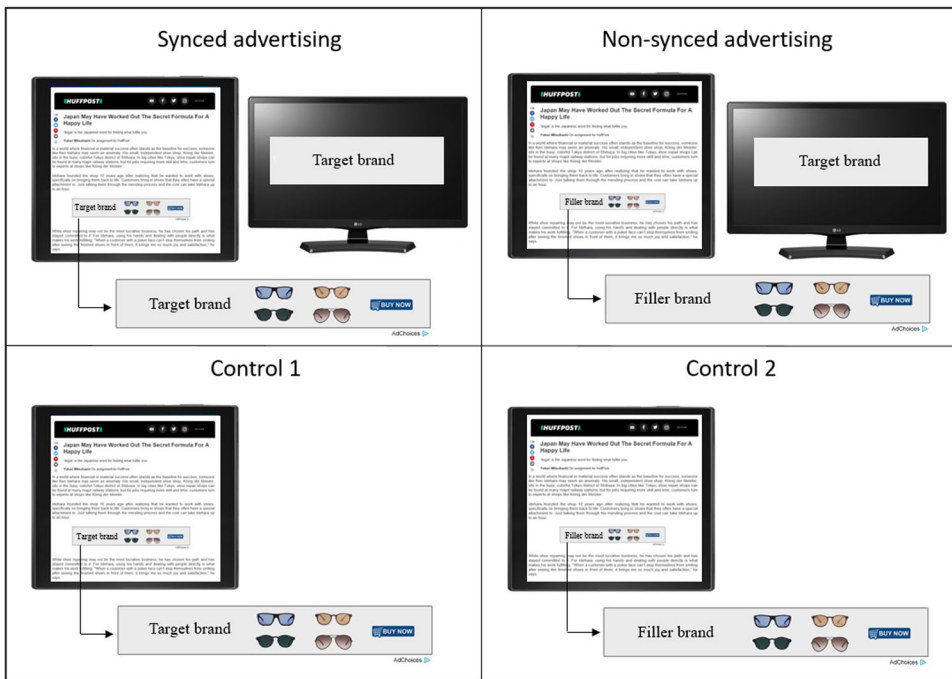
Figure 1. Overview of conditions and examples of stimulus material.

advertising conditions was the brand that was advertised in the banner. In the synced advertising condition, the brand displayed in the banner was the same brand that was displayed in the branded video. In the non-synced advertising condition, the brand displayed in the banner was a different brand. The videos were identical in both conditions.

In the single task conditions, the participants only read a news article. In the first single task condition, the participants viewed the same banner in the news article as in the synced advertising condition showing the target brand. In the second single task condition, the participants viewed the same banner as in the non-synced advertising condition, which included a filler brand. Thus, the first single task condition could have also been viewed as the banner-only condition and second single task condition as the no-exposure condition because the participants were not exposed to the target brand in this condition in any of the media.

Before the start of the experiment, the participants first read and signed an informed consent form. Then, the participants were randomly assigned to one of the four conditions. Randomization was successful as age [F (3, 118) $=$ 0.12, $p =$ .947], gender [χ^2 (3) $=$ 2.81, $p =$ .422], and education [F (3, 117) $=$ 0.45, $p =$ .715] were divided equally across the four conditions. The participants in synced and non-synced conditions were told that they would be asked to read a text and watch a video simultaneously. They were asked to read and watch at the same time and told that they would be asked to answer questions on both the text and the video. In the two single task conditions, the participants were asked to read a text and they were told that they would receive questions about the text afterward. Nothing was mentioned about

advertisements or brands in the invitation to or instructions for the study; this was true for all conditions. The participants had the same amount of time to watch the video and/or read the online news article before the questionnaire advanced automatically to the next page to ensure that exposure time was the same for all participants. After completing the media tasks, the participants filled out a questionnaire with questions displayed in the following order: brand attitude, brand familiarity, perceived relatedness, and demographics. It took about 10 minutes for the respondents to complete the online experiment and they received $1.50 as an incentive.

Stimuli and pretests

In all four conditions, the participants read the same news article that had been taken from an online news site. The article was about how to be happy by finding what fulfills you. A banner was placed in the text resembling the natural placement of a banner on a news website (Figure 1). Two different banners were made; one was for the synced advertising condition and the first single task condition and the other was for the non-synced advertising condition and the second single task condition. The two brands and banners were selected based on two pretests.

The first pretest was conducted to select the video and the two brands for the banners. One of the brands was expected to be perceived as related to the video (synced) and the other as unrelated to the video (non-synced). In the first pretest ($N = 66$, $M_{age} = 37.53$, $SD_{age} = 11.14$, 37.9% female), four videos and 16 brands were tested on MTurk. The participants were randomly assigned to two of the four videos; they were asked to watch the video and then evaluate four brands per video. As shown in Table 1, only Video 1 and Video 4 had brands that differed in their relatedness to the video; these were also significantly different from the midpoint. However, the results showed that only the brands of Video 4 did not differ significantly in their familiarity; they were all relatively unfamiliar brands, which is an important prerequisite when studying advertising effects (Geuens and De Pelsmacker 2017). Based on this pretest, Video 4 was selected, which was a 1:03-minute clip about a brand that makes eyewear out of plastic waste. The brand (brand 1) featured in this video served as the target brand for the main experiment. The other tested (unrelated) brand (brand 3) was selected as the filler brand. Both the target and the filler brand were unfamiliar eyewear brands. In addition, two banners for each brand were created (Table 2). They were the same except for the brand names and logos.

The second pretest (MTurk; $N = 70$, $M_{age} = 33.87$, $SD_{age} = 9.74$, 37.1% female) was conducted to ensure the banners only differed in their relatedness to the video and not in the other aspects (i.e., brand attitude, brand familiarity, whether the ad looks realistic/professional). The pretest showed that the banners were perceived significantly differently in terms of relatedness [$t (32) = 3.016$, $p = .005$][3]. In addition, they did not significantly differ with any of the other variables (Table 2). Therefore, they could be used as stimulus material in the main experiment.

Table 1. Results Pretest 1.

	Brand 1		Brand 2		Brand 3		Brand 4	
	Product	M (SD)	Product	M (SD)	Product	M (SD)	Product	M (SD)
Relatedness								
Video 1	Food	6.32 (1.30)^{a*}	Food	5.15 (1.62)^{b*}	Coffee	2.94 (1.59)^{c*}	Coffee	3.38 (1.95)^{c}
Video 2	Apple	3.89 (2.24)^{c}	Apple	5.44 (1.36)^{a*}	Sweet potatoes	5.17 (1.67)^{ab*}	Sweet potatoes	4.28 (1.65)^{bc}
Video 3	Water	6.28 (1.25)^{a*}	Water	4.07 (2.00)^{b}	Water	3.76 (2.08)^{b}	Water	3.97 (1.96)^{b}
Video 4	Eyewear	5.42 (1.87)^{a*}	Eyewear	3.61 (1.87)^{b}	Eyewear	3.03 (1.63)^{b**}	Eyewear	3.15 (1.44)^{b**}
Brand familiarity								
Video 1	Food	3.38 (2.21)^{b}	Food	4.92 (2.02)^{a}	Coffee	1.80 (1.31)^{c}	Coffee	5.30 (1.42)^{a}
Video 4	Eyewear	2.19 (1.66)^{a}	Eyewear	1.88 (1.89)^{a}	Eyewear	1.65 (1.53)^{a}	Eyewear	1.71 (1.41)^{a}

Different superscript indicates significant differences between brands.
*mean is significantly different ($p < .001$) from the midpoint (4).
**mean is significantly different ($p = .002$) from the midpoint (4).

Table 2. Results Pretest 2.

	Banner ad	
	Target brand	Filler brand
Perceived relatedness	5.19 (1.52)^{a}	3.33 (2.00)^{b}
Brand attitude	4.63 (0.83)^{a}	4.47 (1.24)^{a}
Brand familiarity	2.41 (1.66)^{a}	1.28 (0.68)^{a}
Realism	5.06 (1.48)^{a}	5.61 (1.79)^{a}

Note. The table presents means with standard deviations in parentheses.
Different superscripts indicate significant differences between conditions.

Dependent variable

Brand attitude was measured by six semantic differential items on a 7-point scale (Cronbach's alpha = .95, $M = 4.75$, $SD = 1.20$). The items were *unpleasant-pleasant, bad-good, unappealing-appealing, not valuable-valuable, not interesting-interesting,* and *not useful-useful* (Chang and Thorson 2004; Crites, Fabrigar, and Petty 1994).

Control variable

Brand familiarity was measured using three semantic differential items on a 7-point scale. The items were *not familiar-very familiar, very inexperienced-very experienced,* and *not knowledgeable at all-very knowledgeable* (Cronbach's alpha = .98; $M = 1.55$, $SD = 1.36$). Brand familiarity was added to all the analyses as a control variable.[4]

Manipulation check

We measured relatedness (i.e., overlap in messages) as a manipulation check between the synced and non-synced advertising conditions. The participants in these two groups were the only ones compared because they were exposed to both the video and the banner ad. Perceived relatedness (Segijn, Voorveld, and Smit 2017) was measured by asking participants about the extent to which the banner was related to the video, using a 7-point Likert scale (1 = *totally unrelated*, 7 = *totally related*; $M = 3.22$, $SD = 2.10$).

Table 3. Mean and standard deviations of brand attitude and brand familiarity per condition (study 1).

	Synced advertising	Non-synced advertising	Control 1: banner only	Control 2: no exposure
Brand attitude	5.16 (1.12)[a]	4.78 (1.21)[ab]	4.66 (1.12)[ab]	4.35 (1.29)[b]
Brand familiarity	1.35 (1.07)[a]	1.52 (1.23)[a]	1.53 (1.43)[a]	1.81 (1.70)[a]

Note. The table presents means with standard deviations in parentheses.
Different superscripts indicate significant differences between conditions.

Results

Manipulation check

The results showed that participants in the synced advertising condition perceived the banner and video as significantly more related ($M = 4.25$, $SD = 2.11$) than participants in the non-synced advertising condition ($M = 2.04$, $SD = 1.35$), $F (1, 59) = 71.40$, $p < .001$, $\eta^2 = .28$. Thus, the manipulation was successful.

Effect of synced advertising on Brand attitude

It was proposed that synced advertising would lead to more positive brand attitudes in consumers compared to non-synced advertising, and even more than no exposure at all. The ANCOVA with brand attitude as the dependent variable and the four conditions as the independent variable showed significant differences on brand attitude in the four conditions, $F (3, 119) = 3.39$, $p = .021$, $\eta^2 = .08$. A post-hoc Bonferroni test showed that participants in the synced advertising group had significantly more positive attitudes ($M = 5.16$, $SD = 1.12$) than those in the control group with no exposure ($M = 4.35$, $SD = 1.29$; $p = .013$). The other groups did not significantly differ (Table 3). Thus, the hypothesis was partly accepted.

Discussion study 1

In the first study, we found that synced advertising yielded more positive brand attitudes than no exposure to advertised messages. Although no difference between synced advertising and single exposure (i.e., video only, banner only) was found, the results were shown in the expected direction: No exposure resulted in the least positive brand attitudes, followed by the banner ad only, then by the video only, and finally the participants in the synced advertising condition had the most positive brand attitudes.

However, the results of this study need to be interpreted in light of its limitations. First, the two tasks (i.e., watching the video and reading the online news article) were shown on the same screen. Therefore, it might be argued that this was not a manipulation of synced advertising because this phenomenon describes syncing messages *across* media or devices (Segijn 2019). Second, the conditions also differed in the number of exposures to the brand (i.e., none, single ad exposure, repeated ad exposure). However, the number of exposures may influence brand attitudes (Schmidt and Eisend 2015). Third, the brand in the video had been well integrated into the plot of the video so it might not have been powerful enough to generate stronger effects.

Previous researchers have found that under cognitive load, intrusively-integrated brands will generate more positive brand attitudes than well-integrated brands (Yoon, Choi, and Song 2011).

To account for these limitations, we conducted a second study. The study was a lab experiment in a living room setting in which participants watched an actual TV and used a tablet at the same time. In addition, we changed the design to make sure that all participants were exposed to the brand twice. This was needed to prevent potential biases in the results by comparing participants who were exposed to the target brand only once (in the non-synced condition) and twice (in the synced condition). Finally, the banner ad was synced with an ad in the commercial break instead of a brand displayed within the program's content. This was done to make the manipulation more explicit than the manipulation in study 1.

Method study 2

Sample

Participants were recruited through the subject pool of the university. In total, 133 participants completed the study. Some were removed because of failing all attention checks ("to monitor quality, please respond with a 1, 'totally disagree' for this item") and the quality check ("In your honest opinion, should we use your data?") (Geuens and De Pelsmacker 2017; Meade and Craig 2012). The final sample consisted of 107 participants (M_{age} = 20.55, SD_{age} = 1.94, 75.5% female)[5]. They received €5 or research credits as an incentive.

Design, material and procedure

The experiment consisted of a single factor between-subjects design with three conditions. Synced advertising (vs. non-synced advertising) was manipulated by placing a tablet ad of a brand at the same time as a commercial on TV of the same brand (vs. placing the tablet ad at a different time, i.e. 45 seconds before or after the TV commercial). All participants were exposed to the exact same materials on the TV and tablet. The only difference was the timing of the tablet ad which was either before ($n = 37$), simultaneous to ($n = 37$), or after ($n = 33$) the commercial of the target brand on TV.

The material used in study 2 was different from study 1. We used a 4 minutes and 30 second excerpt of one of the episodes of the Australian television comedy program Upper Middle Bogan that was aired from 2013. The fragment was about a family decorating their garden for Christmas and trying to 'beat' their neighbors. The show was followed by a commercial break that consisted of seven filler ads and one target ad (30 seconds; a cereal brand that was not for sale in the country in which the study took place) placed in the middle of the block. The filler ads were unrelated to the tablet ad, and to the content in the video or magazine. We included filler commercials about shower gel, a sports drink, laundry detergent, facial cream, a hotel deal, and a mobile network provider.

On the tablet, participants read a mock-up ABC (Australian television network) magazine. It contained several general interest articles. The tablet ad was either shown

Table 4. Mean and standard deviations of brand attitude and brand familiarity per condition (study 2).

	Synced advertising (simultaneous)	Tablet ad before	Tablet ad after
Brand attitude	4.27 (1.22)	4.26 (0.98)	4.26 (0.64)
Brand familiarity	2.05 (1.99)	2.35 (1.86)	2.03 (1.77)

Note. The table presents means with standard deviations in parentheses. The conditions did not significantly differ on any of the variables.

simultaneously with the second (before), fourth (synced), or sixth (after) commercial. The tablet ad in the before and after conditions was shown with the same filler commercial on TV. In all conditions, the tablet ad was displayed for 30 seconds (the same duration as the TV commercial) on the middle of the tablet screen. The ad appeared as a second layer on top of the magazine content no matter what page the participant was on, similar to a pop up ad. This type of ad is ideal for the study's purpose because pop up ads are more salient than native ads or other type of display ads, which increases the chance of exposure in a multimedia situation. No other commercial ads appeared in the magazine app.

Variables

Brand attitude (Cronbach's alpha $=$ .90, $M = 4.26$, $SD = 0.98$), brand familiarity (Cronbach's alpha $=$ .96, $M = 2.15$, $SD = 1.87$)[6], and perceived relatedness ($M = 3.76$, $SD = 2.16$) were measured similarly to the methods described for study 1.

Results

Preparatory analysis

Before testing our hypothesis, and similar to study 1, we tested whether the tablet ad in the different conditions were perceived as related to the TV commercial that was simultaneously shown. A one-way ANOVA confirmed a significant difference in perceived relatedness between the synced advertising condition ($M = 5.95$, $SD = 1.20$) and the other two conditions (before $M = 2.41$, $SD = 1.42$, $p < .001$; after $M = 2.82$, $SD = 1.74$, $p < .001$), $F (2, 106) = 64.25$, $p < .001$. As intended, the before and after conditions did not significantly differ from each other in terms of perceived relatedness ($p = .72$).

Effect of synced advertising on Brand attitude

Second, we tested whether showing the tablet ad simultaneous with the TV commercial (i.e., synced advertising) would lead to more positive brand attitudes than showing the tablet ad before or after the TV commercial. The ANCOVA with brand attitude as the dependent variable and the three conditions as independent variables showed a non-significant result [$F (2, 103) = .078$, $p = .925$] (Table 4).

Discussion study 2

The aim of study 2 was to further examine whether synced advertising leads to more positive attitudes; however this was done with a different design than in study 1. Study 2 was a lab experiment in which participants (1) were watching TV and using a tablet at the same time; (2) all had the same amount of exposures to the ad; and (3) viewed a tablet ad that was synced with a TV commercial instead of editorial content. The results showed that whether an ad was shown right before, simultaneous to, or right after the TV commercial did not result in different brand attitudes.

General discussion

The media and advertising landscape is rapidly changing. The rise of mobile devices makes it possible to deliver personalized messages to consumers. Data collection techniques using information on people's media behavior relevant to mobile devices are used to personalize messages related to concurrent media usages; this is known as synced advertising (Segijn 2019). To our knowledge, this is the first academic study empirically examining the effect of synced advertising on brand attitudes. Therefore, the aim of this study was to gain a preliminary understanding of this relationship.

The results showed that synced advertising yields more positive brand attitudes than no exposure to advertised messages. Although no difference between synced advertising and single exposure (i.e., video only, banner only) was found, the results were shown in the expected direction: No exposure resulted in the least positive brand attitudes, followed by the attitudes of those who saw the banner ad only and the video only. Participants exposed to the synced advertising condition had the most positive brand attitudes. In addition, we did not find any differences in brand attitude according to whether the tablet ad was shown before, simultaneous to, or after the TV commercial of the same brand. Therefore, it seems that the effectiveness of synced advertising does not depend on the exact timing of the tablet ad with the TV commercial. It might be argued, then, that synced advertising is as effective as a cross-media campaign in which the ads are shown sequentially. Moreover, the results may imply that ads do not need to be synced in real time without delay in order to be effective. A delay of 45 seconds between ads is found to be as effective in terms of influencing brand attitudes as in situations in which ads are exactly synchronized.

The findings of this study have important implications for theory. First, this is the first study in which the phenomenon of synced advertising in relation to brand attitude has been investigated. Segijn (2019) conceptualized the phenomenon and provided guidelines for future research on the topic. One of the propositions stated that synced advertising would result in more positive affective responses than conventional mobile advertising because of the repetition mechanism. This study, then, can be construed as pioneer research in this regard. Therefore, it is also important to report non-significant results; not reporting non-significant results could lead to a publication bias. Furthermore, the manipulation check of study 1 and a similar analysis in study 2 showed that synced advertising was perceived as more related than non-synced advertising messages. This confirms the idea that the perceived relatedness of the messages is one of the key features of synced advertising. Second, the results advance

theory by testing those theories that were developed prior to the existence of mobile devices and personalized, data-driven forms of advertising (e.g., multiple source perception, repetition-variation theory). Finally, this study advances theory by combining elements of other fields such as cross-media advertising and media multitasking. This not only advances insights into synced advertising but also into related areas. For example, in study 2 we were able to directly compare synced advertising with cross-media advertising by manipulating the timing of the ad. The results advance theory by showing that it is perhaps repetition rather than the exact timing that drives effects on brand attitudes. Future research is necessary to further validate this claim.

The findings have important implications for practitioners as well. Recent statistics showed that mobile devices surpassed television as the leading advertising medium in the U.S. (eMarketer 2018). Synced advertising provides new opportunities for marketers as well as broadcasters to synchronize ads on television in combination with mobile devices. This information is relevant to broadcasters who wish to sell advertising space. Broadcasters and marketers should engage in conversations about how to integrate synced advertising in a way that could benefit them both. For marketers, it is important to know whether synced advertising could actually increase advertising outcomes such as brand attitudes. The results suggest that synced advertising could be an interesting addition to other cross-media advertising strategies.

Limitations and future research agenda

The studies presented are not without limitations, which may also partially explain the null findings. Because they can be considered pioneering studies into synced advertising research, it is important to communicate lessons learned and provide clear-cut suggestions for future research to help this field move forward. First, we tested the effects of synced advertising on brand attitudes by means of two designs, each with their own limitations. The first study was an online experiment in which participations were shown a video clip and an online news article with a banner ad on a split-screen. Despite several built-in checks, an online experiment cannot be completely controlled (Clifford and Jerit 2014). We had to exclude people because they failed multiple attention checks or experienced technical issues related to the stimulus material. The latter led to the removal of several participants who were not able to see the video or who read the text because of technical issues. This was not dependent on the experimental condition, which made it appropriate to remove the participants for this reason (Meyvis and Van Osselaer 2018).

Moreover, whether the online experiment is really suitable to test synced advertising is debatable because the messages were not shown across screens but on the same screen. In addition, the amount of exposures to the brand was not similar in all conditions, which could be an alternative explanation of the results. To account for these limitations, we conducted a lab experiment in which participants watched TV and used a tablet at the same time. Furthermore, the number of exposures to the brand was the same in all conditions, which eliminated this as a confounding factor. This design may fit better with the definition of synced advertising and might therefore be preferred when studying synced advertising. However, it could also be argued

that a 45 second delay between the tablet ad and TV commercial could still be perceived as synced advertising, which could explain the null findings in study 2. Future researchers could look further into the timing aspect (i.e., time between tablet ad and TV commercial) as well as whether the timing of the ads affects other advertising outcomes such as memory or attention to the ad. In addition, future research could explore other methods, such as scenario-based experiments or field experiments. Scenario-based experiments are often utilized to test effects of other forms of personalized messaging (e.g., Bol et al. 2018; van Doorn and Hoekstra 2013; Bleier and Eisenbeiss 2015) and could also be applied to synced advertising. Field experiments in collaboration with industry partners might be worthwhile because it allows the monitoring of consumers' actual current media usage, which can be seen as a key characteristic of synced advertising.

Second, the choice of the dependent variable might have led to the non-significant findings because brand attitudes (even towards unfamiliar ones as in our studies) are typically hard to influence with a single exposure (Schmidt and Eisend 2015). Future research should therefore also explore other (advertising) outcomes. For example, Garaus, Wagner, and Bäck (2017) and Hoeck and Spann (2020) studied the effect of having the same versus different brand advertised across screens on cognitive advertising responses. Furthermore, future research may want to consider measuring the indirect effect of synced advertising on brand attitude. A meta-analysis on media multitasking and advertising effectiveness showed no total effect of multi-screening on brand attitudes. However, they did show that multitasking leads to less resistance to an advertised message, which in turn leads to more positive brand attitudes (Segijn and Eisend 2019). In order to synchronize messages across media in real time, consumers need to use multiple media at the same time. Hence, they need to be multitasking. Therefore, it might be interesting for future researchers to further examine whether consumers will be less resistant to synced advertising messages compared to, for example, their level of resistance to repeated messages that are shown sequentially.

Finally, future research may want to take into account the innovative nature of synced advertising. It is still a relatively new strategy; consumers may not be aware of it and how it operates. Thus, it could be argued that it is necessary to have multiple exposures in which synchronizing occurs before these effects can be observed. A meta–analysis on ad repetition (Schmidt and Eisend 2015) showed an inverted U-shaped course of effect with a maximum level of 10 exposures. Therefore, the "one-shot" nature of the experiments may be seen as a limitation of the study. Future research with multiple exposures is needed to further examine this possibility. Furthermore, it is likely that increasing awareness may generate a pushback because consumers perceive such practices as encroachments on their privacy and sometimes as "creepy" (Smit, Van Noort, and Voorveld 2014; Tene and Polonetsky 2014; Phelan, Lampe, and Resnick 2016). Thus, consumer education focused on advertising literacy is needed to raise the public's awareness. Consumers need to become more aware of this strategy in order to empower themselves. Future research should look into consumers' perceptions of these practices; they could examine the role of privacy concerns and the role of advertising literacy.

Because this is the first study that examines this new advertising strategy, the results need to be seen as a stepping-stone to unraveling the effects and implications of the phenomenon. The results of the current study provide an early indication of what this new strategy is all about; it can also be used to raise consumers' awareness of this new mobile message strategy because it is worthy of reckoning.

Notes

1. We did not find any significant differences between included and excluded participants in terms of age [t (202) = -1.19, p = .237] or gender [chi-square (1) = .017, p = .897]. In addition, exclusion was not dependent on the experimental condition the participant was in [chi-square (3) = 2.116, p = .549].
2. The percentages do not add up to 100% because we asked participants to check all boxes that applied.
3. We had four banners (target/filler brand vs. with/without actor on banner). The four banner ads did not differ with any of the variables. Only the banner ads without the actors were significantly different in perceived relatedness and were, therefore, chosen as stimulus material.
4. In study 1, brand familiarity met the criteria set by Meyvis and Osselaer (2018) to include the variable as a control variable: 1) the control variable and the dependent variable correlated (r = .28, p = .002), 2) the manipulation of the independent variable did not influence the control variable because we asked about 'familiarity prior to exposure', 2) the measurement of the control variable did not affect the measurement of the dependent variable because we first measured brand attitude and then brand familiarity, and 4) there is no significant interaction effect between the independent variable and the control variable, F (3, 118) = 2.37, p = .075.
5. This data collection is part of a bigger study on synced advertising effects.
6. In study 2, brand familiarity met all four guidelines set by Meyvis and Osselaer (2018). Again, the control variable correlated with the dependent variable (r = .39, p < .001) and there was no interaction effect, F (2, 113) = 2.23, p = .112.

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