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The Role of Ad Sequence and Privacy Concerns in Personalized Advertising: An Eye-Tracking Study into Synced Advertising Effects

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ABSTRACT



Synced advertising is a relatively new strategy in which ads are personalized based on concurrent media usage. The aim of this study was to explore whether the sequence in which TV commercials and tablet ads were shown in synced advertising affected consumers' memory and attention toward advertisements in both media. Because of public debate about privacy concerns related to personalized advertising, we examined the moderating role of consumers' privacy concerns as a personal factor. An eye-tracking experiment ($N=118$) showed that, overall, synchronizing ads across media results in the most favorable cognitive responses. The placement of a tablet ad simultaneous to (versus before or after) a TV commercial for the same brand resulted in the most attention toward both ads. However, consumers with higher (versus lower) privacy concerns paid less attention to the tablet ad when it was shown simultaneously with the TV commercial, compared to consumers with lower privacy concerns. The results show that synced advertising is a promising personalized advertising strategy for the industry but at the same time it might be less effective for people with higher privacy concerns.

Advertising spending keeps growing every year (Statista 2017). With a share of more than one-third of ad spend, mobile is now the leading advertising medium (eMarketer 2018). To cut through the clutter, advertisers personalize advertising by using algorithms and collecting information on their consumers. These data-driven techniques allow for more precise targeting and are therefore seen as more effective by advertisers (Kumar and Gupta 2016; Yun et al. 2020). A relatively new personalized advertising strategy is synced advertising. By means of advanced personalization techniques (for an overview, see Segijn and van Ooijen 2020a), it is possible to synchronize the advertisements on mobile devices with those on other media content in real time (Segijn 2019).

Synced advertising is potentially a viable way of personalizing advertisements across media in real time because many consumers are using multiple media

simultaneously (Nielsen 2018) and attention becomes a scarce and valuable resource (Duff and Segijn 2019). By simultaneously advertising on multiple media at the same time, synced advertising increases the chance of exposure to a brand. Synced advertising differs from other personalized strategies, such as online behavioral advertising, because the personalized messages are based on people's current (versus past) media behavior (Segijn 2019). In this study, we take a closer look at the timing characteristic of synced advertising by exploring the role of ad sequences.

The aim of the study is to empirically examine the effect of synced advertising (television and tablet) on consumers' cognitive advertising responses (i.e., memory and attention toward the ads on both media). More specifically, because the timing of the ad is the key defining characteristic of synced advertising, we explore whether the sequence of exposure to ads in

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these media—exposure to a tablet ad before, simultaneous to, or after exposure to a TV commercial advertising the same brand—affects consumers' cognitive advertising responses. Furthermore, the current study examines the role of privacy concerns as a personal characteristic, when considering the effect of ad sequences in synced advertising on advertising outcomes. Some consumers perceive personalization practices invasive of their privacy (e.g., Boerman, Kruikemeier and Zuiderveen Borgesius 2017; Segijn and van Ooijen 2020b; Tene and Polonetsky 2014). In addition, previous researchers found that concerns about privacy could moderate personalized advertising effects (Zarouali et al. 2017).

It is important to start exploring factors that could influence the effectiveness (i.e., memory and attention) and boundary conditions (i.e., privacy concerns) of synced advertising because this strategy is becoming more common in the industry (Garrity 2018). By comparing the effect of simultaneous and sequential ad exposure, this study also starts to build theory around this phenomenon with the media multitasking and cross-media literature as a starting point. Practically, this study could provide guidelines on whether to adopt this strategy and how to implement it with regard to ad sequence, which is argued to play an important role in determining the success of an integrated marketing program (e.g., Batra and Keller 2016; Gensler et al. 2013). Finally, the study contributes to the debate related to personalized advertising and privacy issues by examining how consumers' privacy concerns influence the effects of this new type of personalized advertising.

Literature Review

We examine the effect of ad sequence on cognitive advertising responses (i.e., memory and attention) in synced advertising. So far, only a few empirical studies have examined sequencing effects on consumers' ad responses, but they did not focus on memory and attention. Voorveld, Neijens, and Smit (2012) found that a TV–Internet commercial sequence was effective for inducing more positive attitude toward the ads and message evaluations for both high- and low-involvement products while an Internet–TV sequence was effective for high-involvement products only. Lim et al. (2015) compared two different sequences of TV, websites, and a mobile TV device (i.e., digital multimedia broadcasting) with regard to credibility, attitudes, and purchase intentions but did not find any differences. Recently, Lee and Vakratsas (2019) showed that prior exposure to online advertising enhanced the effectiveness of TV

advertising with regard to purchase behavior but not the other way around.

In the current study, we focus on combining TV commercials and tablet ads. The ad sequence can vary in three ways; the tablet ad may be shown before the TV commercial (*before*), the tablet ad may be shown simultaneous to the TV commercial (*simultaneous*), or the tablet ad may be shown after the TV commercial (*after*). We chose the combination of TV and tablets because they are often combined, and bigger screens will generate more reliable attention measures with a mobile eye tracker (see Methods section). Because of the limited knowledge on ad sequence on cognitive ad responses, we combine insights from the media multitasking and cross-media literature to gain insights into potential effects.

Combining Insights from the Media Multitasking and Cross-Media Literature

Synced advertising is enabled by media users' tendencies to consume or actively use two media at the same time (i.e., media multitasking; Duff and Segijn 2019). The literature has been consistent in showing that multitasking negatively impacts cognitive responses, such as memory (e.g., Kazakova et al. 2016; Shapiro and Krishnan 2001) and attention (e.g., Jeong, Hwang, and Fishbein 2010; Segijn et al. 2017). Synced advertising is a form of message repetition across media at the same time (Duff and Segijn 2019). Repetition of messages in general has been found to be beneficial for memory (Schmidt and Eisend 2015), but results for research into same versus different brands across media have been mixed; for example, one study showed a positive effect (Hoeck and Spann 2020), while another found no effect (Garaus, Wagner, and Bäck 2017).

Regarding attention, it has been theoretically argued that synced advertising could increase attention to the message when simultaneously using multiple media. The rationale is that consumers often switch their visual attention between media (Brasel and Gips 2011; Segijn et al. 2017). Thus, when an ad is presented on TV, consumers may miss it when they look at their mobile device and vice versa. However, having an ad for the same product or brand on both media at the same time will increase the chance that a consumer is exposed to it on one medium or the other (Segijn 2019).

In addition, we rely on the cross-media advertising literature to get more insights into the potential effects of synced advertising sequence on cognitive ad responses. Like synced advertising, cross-media advertising combines the use of multiple media in an advertising

campaign (Neijens and Voorveld 2015). However, whereas cross-media advertising is usually studied as the strategic use of multiple media over a longer campaign period (Assael 2011), synced advertising can be seen as a special case in which media are combined around a particular media consumption moment of a particular media user (Duff and Segijn 2019). The cross-media advertising literature offers different explanations that help to predict how people respond to different sequences of ads in multiple media. A first is forward encoding, meaning that exposure to an advertisement in one medium or on one platform stimulates interest and curiosity, which enhances the processing of subsequent advertisement exposures in other media or platforms (e.g., Edell and Keller 1989; Voorveld, Neijens, and Smit 2011; Neijens and Voorveld 2015). The second is backward retrieval, which occurs when mentally replaying advertisements previously viewed in one medium when exposed to advertisements in another medium adds to synergy effects (Chang and Thorson 2004; Edell and Keller 1989; Neijens and Voorveld 2015; Voorveld, Neijens, and Smit 2011).

These insights from the media multitasking and cross-media literature, however, do not point toward specific expectations about differences for ad sequence in a synced advertising campaign. Therefore, we formulated the following research questions:

RQ1: To what extent does ad sequence in synced advertising affect memory of a brand?

RQ2: To what extent does ad sequence in synced advertising affect attention to (a) the tablet ad and (b) the TV commercial?

RQ3: To what extent does ad sequence in synced advertising affect comparative attention toward both ads?

The Moderating Role of Privacy Concerns As a Personal Factor

Privacy concerns are “concerns about [the] possible loss of privacy as a result of information disclosure to a specific external agent” (Xu et al. 2012, p. 2). Privacy concerns have found to be a moderator in personalized advertising coping strategies. For example, Zarouali et al. (2017) found that adolescents with higher privacy concerns were more skeptical toward personalized ads versus nonpersonalized ads. In addition, Baek and Morimoto (2012) found a positive relationship between privacy concerns and ad skepticism. They also found that privacy concerns led to more ad avoidance, which suggests that privacy concerns could have a negative relationship with attention to advertising. Given the different perceptions that people have about TV commercials and

mobile (banner) ads (Bronner and Neijens 2006), it might be that for consumers with higher privacy concerns certain sequences trigger resistance or reactions to persuasive techniques more than they do for consumers with lower levels of concerns. For example, because consumers might be more familiar with receiving personalized ads on their mobile devices than on TV, they might pay more attention to personalized ads on TV than on mobile devices when they are exposed to simultaneous synced advertising. To our knowledge, researchers have not looked into the effects of ad sequence on advertising outcomes for consumers with higher and lower privacy concerns as a personal factor. With the increasing amount of personalized advertising messages and concerns related to privacy, it is important to get a better understanding of these issues. To this end, we formulated the following research question:

RQ4: To what extent is the effect of ad sequence in synced advertising on cognitive advertising effects (i.e., memory and attention) moderated by privacy concerns?

Method

Sample

Participants were recruited through the subject pool of the university. They received €5 or research credits as an incentive. In total, 133 participants completed the study.¹ Some participants were removed because of technical errors, issues with the eye-tracking data, or failing all attention checks. The final sample consisted of 118 participants ($M_{\text{age}} = 21.02$, $SD_{\text{age}} = 3.83$, 72.9% female; $n_{\text{before}} = 41$, $n_{\text{simultaneous}} = 41$, $n_{\text{after}} = 36$) for the eye-tracking data and 107 participants ($M_{\text{age}} = 20.55$, $SD_{\text{age}} = 1.94$, 75.5% female; $n_{\text{before}} = 38$, $n_{\text{simultaneous}} = 37$, $n_{\text{after}} = 32$) for the questionnaire data.² A few participants did not fixate on the target TV commercial or the banner ad and had a measure of attention of zero, making this a zero-inflated variable. Therefore, we considered only those participants who fixated on the TV commercial ($n_{\text{before}} = 37$, $n_{\text{simultaneous}} = 37$, $n_{\text{after}} = 30$) or the tablet ad ($n_{\text{before}} = 25$, $n_{\text{simultaneous}} = 29$, $n_{\text{after}} = 24$) for the respective analyses.

Design and Procedure

The experiment consisted of a between-subjects design with three manipulated conditions (i.e., the tablet ad displayed before, simultaneous to, or after a TV commercial of the same brand), and privacy concerns were measured as a personal characteristic. Upon consent, the participants were randomly assigned to one of the

TV Content	TV show Upper Middle Bogan	Commercial break						
		Filler ad <i>Laundry detergent</i>	Filler ad* <i>Shower gel</i>	Filler ad <i>Sports drink</i>	Target ad <i>Cereal</i>	Filler ad <i>Mobile network provider</i>	Filler ad* <i>Facial cream</i>	Filler ad <i>Hotel deal</i>
Duration	4.28 minutes	15 seconds	30 seconds	15 seconds	30 seconds	15 seconds	30 seconds	15 seconds
Tablet ad <i>Before</i>								
Tablet ad <i>Simultaneous</i>								
Tablet ad <i>After</i>								



Figure 1. Experimental stimuli. A black box indicates the timing of the tablet ad in the different conditions (i.e., before, simultaneous to, after). *These ads were reversed in the after condition to make sure that the tablet ad was paired with the same TV commercial as in the before condition.

conditions. In all conditions, the participants watched an excerpt of a TV series (i.e., *Upper Middle Bogan*) followed by a commercial break. Simultaneously, they all browsed through a digital general interest magazine on a tablet in a living room lab while watching TV. The only difference between the three conditions was the timing of the tablet ad that appeared in the magazine app, which appeared either before, simultaneous to, or after the commercial on TV (Figure 1). In all conditions, the tablet ad was displayed for 30 seconds (same duration as the TV commercial) on the middle of the tablet screen. The tablet ad was programmed in the app based on a time stamp to mimic synced advertising. 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 or overlay ad. The commercial break on the TV consisted of six filler ads and one target ad (a cereal brand unfamiliar in the country of study) placed in the middle of the block (total duration 2 minutes, 30 seconds). The tablet ad in the before and after condition was displayed with the same filler commercial on TV, with a different brand and product category than what was shown in the target TV commercial. Hence, the content was unrelated to the synced ad (Figure 1). After using the media, the participants were asked to fill out a questionnaire including brand memory, privacy concerns, and demographic variables.

Variables

Memory

Memory was measured with four self-report questions measuring unaided recall (“Do you remember any brands?”), aided recall (“Do you remember a cereal brand?”), brand recognition (“Do you remember any of

the brands listed below?”), and ad recognition (“Have you seen this ad?”). Each correct answer was coded as 1; each incorrect answer was coded as 0 (based on Sutherland and Sylvester 2000; Voorveld 2011). For the first two measures, misspellings were treated as correct. A sum score was calculated to create the variable brand memory (range 0 to 4; $M = 1.55$, $SD = 1.36$).

Attention

Attention (time spent; Cutrell and Guan 2007) was measured with eye tracking. The mobile eye tracker (SMI Eye Tracking Glasses 2 Wireless) was used to enable head movements and data logging of both media, which were both indispensable for this study. Different from a fixed eye tracker, the mobile eye tracker produces different videos for each participant depending on what they are looking at in any given time, which requires manual coding. Following the guidelines by Segijn et al. (2017), the eye-tracker videos were coded in Observer XT 13 by two independent student coders blind to the research objective. They coded the time spent that a participant looked at the tablet ad or TV commercial. A sum score of total time spent was calculated (in seconds, $M_{\text{tablet ad}} = 2.04$ s, $SD_{\text{tablet ad}} = 2.81$ s; $M_{\text{tvcommercial}} = 8.86$ s, $SD_{\text{tvcommercial}} = 11.91$ s). The first coder coded 100% of the sample and the second coder coded 25% of the sample. Krippendorff’s alpha of all measures was $\geq .77$, indicating sufficient to good inter-coder reliability (Krippendorff 2004). Data of the first coder were used for the subsequent analyses.

Perceived Privacy Concerns

Privacy concerns were measured by six items on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly*

Table 1. Summary of results.

Dependent Variable	Result
Direct effects	
Memory (RQ1)	Before = Simultaneous to = After
Attention TV commercial (RQ2a)	Simultaneous to = Before > After
Attention tablet ad (RQ2b)	Simultaneous to = After > Before*
Attention commercial versus tablet ad (RQ3)	TV commercial > banner ad (in all conditions)
Moderation effects of privacy concerns (RQ4)	
Memory	Before: lower privacy concerns > higher privacy concerns*
Attention TV commercial	No differences
Attention banner ad	Simultaneous to: lower privacy concerns > higher privacy concerns After: lower privacy concerns > higher privacy concerns*

*Marginally significant.

agree) derived from Dolnicar and Jordaan (2007). One of the items, as an example, was, “I am concerned about misuse of personal information” (Cronbach’s $\alpha = .80$, $M = 5.29$, $SD = 1.05$).

Results

Direct Effects on Memory

The results of all research questions are summarized in Table 1. We ran a negative binomial regression to look at the impact of three conditions: before ($M = 1.66$, $SD = 1.34$), simultaneous to ($M = 1.62$, $SD = 1.36$), and after ($M = 1.34$, $SD = 1.41$) on memory. Negative binomial regression is preferred when data are not normally distributed (e.g., as with count variables like memory) and it also accounts for overdispersion, in contrast to analysis of variance (ANOVA). In the regression analysis, the after condition ($\beta = 0.30$, $p = .077$) was the base category, and the differences between simultaneous to ($\beta = 0.19$, $p = .394$) and before ($\beta = 0.21$, $p = .218$) from the base category were not significant. Also, the difference between simultaneous to and before was not significant ($p = .912$), indicating no significant differences among the three conditions.

Direct Effects on Attention

Attention to the TV Commercial

To answer our research questions on attention, we ran a zero-inflated negative binomial regression,³ as attention is a count variable. We examined attention to the TV commercial for the three conditions: before ($M = 10.30$, $SD = 9.53$), simultaneous to ($M = 10.30$, $SD = 16.10$), and after ($M = 5.58$, $SD = 7.70$). In the regression analysis, the after condition ($\beta = 1.72$, $p < .001$) was the base category, and the differences between simultaneous to ($\beta = 0.64$, $p = .022$) and before ($\beta = 0.61$, $p = .022$) from the base category

were significant, indicating that the participants in the simultaneous to and before conditions spent most time on the TV commercial followed by the participants in the after condition. The difference between simultaneous to and before was not significant ($p = .919$).

Attention to the Tablet Ad

Next, we examined attention to the tablet ad for the three conditions: before ($M = 1.32$, $SD = 1.62$), simultaneous to ($M = 2.63$, $SD = 3.40$), and after ($M = 2.19$, $SD = 3.04$). In the regression analysis, the after ($\beta = 0.96$, $p < .001$) condition was the base category, and the difference between the after and simultaneous to conditions was not significant ($\beta = 0.20$, $p = .558$). The difference between the after and before condition was marginally significant ($\beta = -0.65$, $p = .079$), indicating that participants in the simultaneous to and after conditions spent more time on the tablet ad.

Comparing Attention to Both Ads

The results of the regression analysis showed that participants in all three conditions paid more attention to the TV commercial than the tablet ad ($\beta = -0.97$, $p < .001$).

Privacy Concerns

Finally, we examined whether privacy concerns as a personal factor moderated the relationship between the ad sequence in synced advertising on measures of memory and attention. First, we ran a negative binomial regression to examine the impact of participants’ privacy concerns on memory for the three conditions (i.e., before, simultaneous to, after). No statistically significant moderating effect of privacy concerns was found in the after ($\beta = -0.20$, $p = .182$) and simultaneous to ($\beta = -0.13$, $p = .314$) conditions. However, a marginally significant and negative effect was found in the before ($\beta = -0.27$, $p = .065$)

condition (Figure 2). This finding means that participants in the before condition with higher privacy concerns showed lower memory as compared to participants with lower privacy concerns. No significant differences among the conditions were found.

Second, we ran a zero-inflated negative binomial regression to examine the effect of privacy concerns on attention to the TV commercial⁴ and the tablet ad within three conditions. No significant moderation effect of privacy concerns was found regarding the impact of three conditions on attention to the TV commercial. Regarding attention to the tablet ad, the results showed that participants with higher privacy concerns spent significantly less time on the tablet ad in the simultaneous to ($\beta = -0.28, p = .045$) and after ($\beta = -0.41, p = .079$, marginally significant) conditions, as compared to participants with lower privacy concerns (Figure 2). No statistically significant moderating effect of privacy concerns was found in the before ($\beta = -0.08, p = .811$) condition. Also, no significant differences among the conditions were found.

Discussion

Synced advertising is an upcoming personalized advertising strategy that makes use of consumers' concurrent media usage in real time (Segijn 2019). We explored the effects of synchronizing a tablet ad with a TV commercial (i.e., before, simultaneous to, after) on consumers' cognitive advertising responses (i.e., memory and attention). Finally, we examined the moderating role of privacy concerns as a personal factor to give insights into the boundary conditions of this strategy.

The results showed that advertisements in both media received the most attention when they were displayed simultaneously (i.e., synced advertising). The TV commercial received the most attention when a tablet ad was displayed simultaneously or a tablet ad was shown before the TV commercial. In addition, the tablet ad received more attention when it was displayed simultaneously to or after the TV commercial than when it was placed before the TV commercial. However, these results do not apply to all consumers. The results showed that privacy concerns reduce the amount of attention that consumers spend on the tablet ad. Consumers with higher privacy concerns spent less time on the tablet ad when it was displayed at the same time as the TV commercial, compared to consumers with lower privacy concerns.

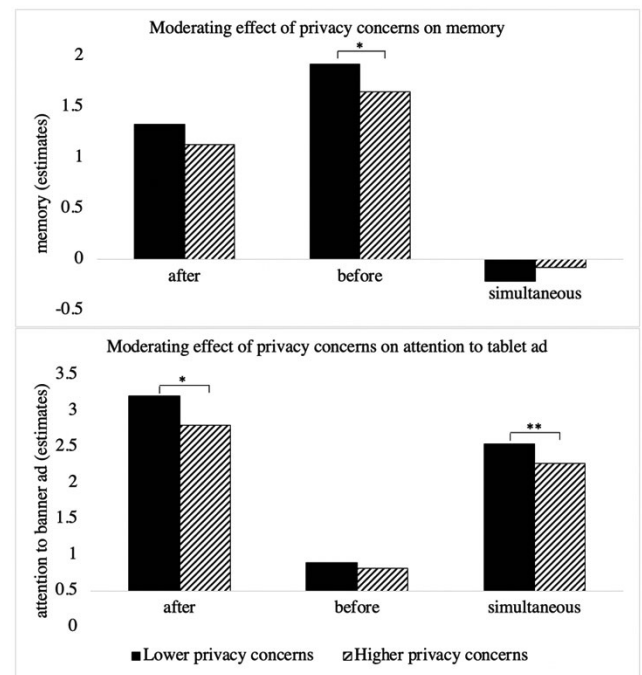


Figure 2. Moderation effect of privacy concerns. Privacy concerns are estimated at 1 for higher privacy concerns and at 0 for lower privacy concerns. Moderation effect of privacy concerns on attention to TV commercials was not significant for all three ad sequences and is therefore not presented in a graph. ** $p < 0.05$; * $p < 0.10$.

First, the findings of this study contribute to theory building on synced advertising effects by combining insights from the media multitasking literature and cross-media advertising literature. So far, these two streams of literature have been treated separately. Synced advertising combines elements of both fields, which contribute to both more insight into this new phenomenon as well as more knowledge in the cross-over between media multitasking and cross-media advertising. In the literature on cross-media advertising, the sequence in which people are exposed to ads in multiple media is argued to be an important variable determining consumers' responses (e.g., Batra and Keller 2016; Gensler et al. 2013; Lee and Vakratsas 2019; Voorveld, Neijens, and Smit 2012). This is important because it is imperative to expose people to the right medium in the right stage of the consumer decision journey (e.g., Batra and Keller 2016), as well as because certain sequences might be more effective in triggering forward encoding and image transfer. Simultaneous exposure, which is examined in the media multitasking literature, was not previously conceptualized in cross-media literature, however.

Conversely, underlying processes and boundary conditions mentioned in the media multitasking

literature (e.g., task relatedness, enjoyment, counterarguing) were investigated only in the context of exposure to multiple media at the same time. Based on the results of this study—that both simultaneously and sequentially exposing consumers could positively affect cognitive advertising responses and the current media landscape that provides opportunities for cross-media campaigns to target the multitasking consumer (Duff and Segijn 2019; Pilotta and Schultz 2005; Pilotta et al. 2004)—it could be argued that the theoretical foundations used in both fields should be more extensively integrated in future research. Future research could examine potential mechanisms of ad sequence on ad responses. For example, post hoc analyses showed that for the TV commercial there was a significant impact of attention on memory ($\beta = 0.24$, $p = .003$) while controlling for the three conditions, hinting at a mediation effect. However, no mediation effect was found for the tablet ad, as attention showed no significant impact on memory ($\beta = 0.07$, $p = .527$).

Second, it advances theory on synced advertising and memory effects. Synced advertising is a form of massed message repetition. Typically, learning theories are used to predict repetition memory effects. When new information is processed it is linked to existing knowledge (Schacter 1996); and the more repetition, the easier it is remembered (Fuentes et al. 1994). However, consumers need time between exposures to process information and form associations (Janiszewski, Noel, and Sawyer 2003). Thus, the question is whether learning theories also apply when repetition happens simultaneously (i.e., synced advertising). Our results show that repetition resulted in a positive effect on memory regardless of timing. Future research could further examine the effects of message spacing and learning effects.

Third, this study advances theory on synced advertising and attention effects. Attention allocation can be explained by top-down (i.e., goal-driven) or bottom-up (i.e., content-driven) processes (Eysenck and Keane 2005), and both processes may have played a role. Our results showed that attention to one message could drive attention to another in a different medium. This applies to both media: The TV commercial received more attention when a tablet ad was placed before or simultaneous to the TV commercial, while the tablet ad received more attention when the TV commercial was placed before or simultaneous to the tablet ad. This may indicate top-down processes of attention allocation (forward encoding). Furthermore, the results showed that the TV commercial received more attention than the tablet ad

irrespective of the ad sequence. This is not surprising, given the format of both messages. Whereas tablet ads are visual and static, TV commercials are audiovisual and more dynamic, hence attracting more attention (Brasel and Gips 2017; Lang et al. 2000). In addition, the number of participants who did not fixate on the ad was also higher for the tablet ad (33.9%) than the TV commercial (11.86%). This result further demonstrates bottom-down processes of attention.

Finally, this study advances theory on synced advertising and privacy concerns. Similar to other personalized advertising strategies (Baek and Morimoto 2012; Zarouali et al. 2017), privacy concerns may lead to avoidance behaviors in synced advertising. Consumers with high privacy concerns spent less time on the tablet ad when it was simultaneously shown with a TV commercial of the same brand. It is possible that consumers with high privacy concerns are better able to make the connection between the ads and strategy used. Therefore, a potential explanation is that consumers with high privacy concerns are avoiding the tablet ad because they are more aware of the persuasive intent and tactics used. According to the persuasion knowledge model (Friestad and Wright 1994), this could lead to avoidance behaviors. Future research is needed to further validate this claim.

The results have important practical implications for campaigns employing multiple media and platforms, such as synced advertising or cross-media advertising. We showed that ad sequence plays an important role in garnering attention toward TV commercials and tablet ads. Attention to TV commercials has been low and declining (Krugman, Cameron, and White 1995; Bellman et al. 2019). With an increasing number of consumers multitasking (Nielsen 2018), attention is scarcer than ever before. According to this study, synchronizing advertisements across media (TV & tablet) results in the most visual attention to advertisements in both media. Furthermore, the results showed that attention could be enhanced by placing an ad for the same brand in another medium before or simultaneous to the ad. However, this result does not apply to all consumers, depending on their privacy concerns.

Finally, the results of this study could encourage a debate around privacy and ethics in the industry. Synchronizing ads is made possible by collecting or purchasing consumers' data. Surveys have shown that U.S. adults indicated these kinds of practices are seen as a privacy invasion (e.g., Boerman, Kruikemeier and Zuiderveen Borgesius 2017; Segijn and van Ooijen 2020b; Tene and Polonetsky 2014). The question remains as to what extent consumers need to be

informed about synced advertising as a relatively new advertising strategy. When the advertising industry favors self-regulation over governmental intervention, conversations need to be held about the roles and responsibilities of the advertising industry in informing consumers and using ethical advertising strategies. If the industry is not able to self-regulate, a debate needs to be held about governmental intervention in the form of (privacy) regulations. In summary, synced advertising seems a promising personalized advertising strategy for the industry; however, we need to continue conversations around privacy and ethics.

Notes

1. The data presented are part of a larger study on synced advertising effects.
2. To increase power, all participants with reliable eye-tracking data were also included for the attention analysis when their survey data were not reliable (e.g., missing attention checks, response patterns).
3. We ran zero-inflated negative binomial regression, which verified there was no systematic difference between the respondents in the three categories relating to who saw the TV commercial or tablet ad and those who did not.
4. No significant moderation effect of privacy concerns was found regarding the impact of three conditions on attention to the TV commercial and was therefore not included.

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