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The Role of Perceived Surveillance and Privacy Cynicism in Effects of Multiple Synced Advertising Exposures on Brand Attitude

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ABSTRACT

Technological advancements have made it possible to personalize advertising messages across media in real time based on consumers' offline media behavior (i.e., synced advertising). This is thought to positively influence consumers' brand attitudes. However, consumers encountering multiple synced advertising exposures could decrease the strategy's effectiveness by increasing the perceptions of surveillance among consumers. Moreover, these effects may differ depending on privacy cynicism; consumers may decrease their privacy protection behaviors as a result of feeling hopeless and frustrated by the high demands and lack of control of their data being used for personalized advertising purposes. An online experiment ($N=527$) showed the more that ads were synchronized, the higher the perceived surveillance, which led to less positive brand attitudes for participants with the lowest levels of privacy cynicism and positive brand attitudes only for participants with intermediate to high levels of privacy cynicism. The results advance theory on the direct effects, underlying mechanisms, and consumer-related factors that play a role in synced advertising effects. It shows that synced advertising could be a promising advertising strategy but that considerations around privacy and ethics are essential.

Advances in digital media technology have enabled digital marketers and advertisers to send ad messages personalized to consumers at the right time in the right place with the right frequency (Kim and Huh 2017; Perlich et al. 2012). Moreover, these technologies have enabled personalizing advertising across media in real time based on consumers' offline media behavior, which is known as synced advertising (Segijn 2019). This form of personalization enables synchronizing mobile display ads with other media content (e.g., TV, radio, outdoor) that is simultaneously consumed. For example, consumers receive an ad for a brand on their mobile device, which is simultaneously broadcast during a TV commercial break. As most consumers today simultaneously use multiple media, synced advertising is thought to be an effective digital marketing strategy to draw consumers' attention to ads (Duff and Segijn 2019; Segijn, Voorveld, and Vakeel 2021) and is expected to show better ad effectiveness than nonsynced messages on memory (Hoeck and Spann 2020) and brand attitudes (Segijn and Voorveld 2021). Positive effects of synced advertising have also been demonstrated in the industry. For instance, Nissan, an automotive brand, conducted a synchronized advertising campaign in the United Kingdom and France, resulting in a 96% increase in brand uplift. This represents a 39% boost in brand uplift attributed to the synchronized advertising campaign (Wywy 2015).

Despite some of its promising effects for advertising, personalization strategies such as synced advertising also pose challenges in terms of their effects on consumers. Data-driven advertising
and surveillance technologies can increase consumers’ feelings of being monitored (i.e., perceived surveillance; Phelan, Lampe, and Resnick 2016; Segijn, Opree, and van Ooijen 2022). In addition, we argue that in some cases consumers may respond more negatively (e.g., less positive brand attitudes) to synchronized messages because they experience surveillance. However, consumer awareness of synced advertising is low (Boerman and Segijn 2022; Segijn and van Ooijen 2021). Therefore, multiple synced advertising exposures might be needed for the consumer to classify the synced ad as a surveillance episode (Strycharz and Segijn 2022). Such a realization of persuasion tactics may have negative effects on advertising effectiveness, such as brand attitude (Friestad and Wright 1994). Thus, multiple exposures of synced advertising in particular may increase consumer awareness of this advertising tactic and may affect how consumers respond to it. The current study examines to what extent exposure to multiple synced advertising exposures influences consumers’ brand attitudes through perceived surveillance.

While perceptions of (increased) surveillance have shown to be associated with resistance to persuasion (Farman, Comello, and Edwards 2020; Segijn, Kim, et al. 2021; Sifaoui, Lee, and Segijn 2023), perceptions of surveillance may not always affect how people respond to a message in the same way. Guided by the dataveillance framework (Strycharz and Segijn 2022)—which offers theoretical guidance on how an act of surveillance affects message responses through perceived surveillance depending on individual differences—we argue that how consumers respond to surveillance may depend on their level of privacy cynicism. Privacy cynicism is a cognitive coping mechanism that allows individuals to overcome or ignore privacy concerns and rationalize their use of privacy-invasive online services (Hoffmann, Lutz, and Ranzini 2016; Lutz, Hoffmann, and Ranzini 2020; van Ooijen, Segijn, and Opree 2024). This individual characteristic is associated with mistrust toward data collectors and feelings of privacy vulnerability as well as powerlessness related to the experience of being online. It is argued to emerge within individuals because of the powerful role of digital platforms in our society that extract personal data, which leaves individuals not able to participate meaningfully in society without paying with their personal data and makes them feel out of control with regard to safeguarding their privacy (Hoffmann, Lutz, and Ranzini 2016). The current study examines privacy cynicism as a consumer-related factor that may moderate synced advertising effects when consumers experience surveillance.

In sum, the aim of this research is to examine to what extent multiple exposures of receiving synced advertising messages affect brand attitudes through perceived surveillance under conditions of privacy cynicism. The current study extends our knowledge of the effect of synced advertising on brand attitude by (1) studying the effects depending on the number of synced advertising exposures, (2) going beyond testing direct effects by studying perceived surveillance as an underlying mechanism of the effect, (3) studying privacy cynicism as a consumer-related factor that moderates the relationship between perceived surveillance and brand attitudes, and (4) replicating the findings for three different brands.

Given the growth of consumer data as input to personalize advertising in real time (Kantrowitz 2014), it is crucial to examine how multiple synced advertising exposures may affect consumer responses (i.e., brand attitudes). Thus, research filling this gap is much needed because of the prevalence of this synced advertising strategy and potential worrisome consequences for consumers’ privacy. This study contributes to the advancement of the dataveillance framework (Strycharz and Segijn 2022) and is among the first to test it empirically. Theoretical knowledge is needed to understand whether and how synced advertising could influence brand attitudes by studying perceived surveillance as a potential underlying mechanism of the relationship between synced advertising and brand attitude, as well as the moderating effect of privacy cynicism. In doing so, this study advances the theory on the topic of data-driven advertising, synced advertising, and privacy. In addition, it provides advertisers with insights into whether to adopt this strategy and how to implement it regarding its frequency. Finally, the results inform media literacy programs and privacy regulations regarding personalized advertising and data collection practices.
Literature review

Proposed effects of synced advertising

Synced advertising is a form of personalized advertising in which content recognition technologies are used to trigger a digital ad based on what is seen or heard in other media (e.g., TV, radio, outdoor) in real time (Garrity 2018; Segijn 2019). Digital ads can be synchronized with both commercial and editorial content. For example, consumers could receive mobile display ads for a specific brand on their mobile devices for a product that is simultaneously discussed on TV or shown in the commercial break. A variety of tools and technologies can be used for synced advertising; ads can be synchronized by image, video, and audio metadata recognition tools (Garrity 2018).

Similar to other types of personalized advertising strategies, synced advertising has both benefits and costs for consumers (Segijn and van Ooijen 2021), known as the personalization paradox (Awad and Krishnan 2006). The main costs mentioned by consumers are privacy risk and privacy concerns (Segijn and van Ooijen 2021). Alternatively, it could add value to advertising (e.g., information or entertainment value) and save time (i.e., convenience), and synced advertising makes digital ads relevant to other media content that is consumed simultaneously. The latter is important because media research shows that most people multitask when using media (Nielsen 2018). Some first studies into synced advertising effects found it could be an effective strategy in terms of increasing attention (Segijn, Voorveld, and Vakeel 2021) and memory (Hoeck and Spann 2020; Segijn, Kim, et al. 2024). In addition, a study into the effects of synced advertising on brand attitude showed a first indication that synced advertising could lead to more positive brand attitudes compared to no exposure to the brand (Segijn and Voorveld 2021). However, no effect was found when keeping the number of exposures constant. Segijn and Voorveld (2021) noted that consumers might not be aware yet of how it operates because it is a relatively new personalization strategy. Indeed, Segijn and van Ooijen (2021) showed that consumers have limited knowledge of synced advertising and how it works, but increased knowledge of the strategy could change how consumers respond to the synced ad (Segijn, Kim, et al. 2024). To extend our knowledge on synced advertising effects, the current study examines the effect of multiple exposures in which consumers receive synced advertising messages on brand attitudes. Moreover, we argue that this effect is mediated by perceived surveillance, which is discussed in the following section.

Dataveillance framework

To examine the relationship between synced advertising, perceived surveillance, and brand attitudes, this research is guided by the dataveillance effects in advertising landscape (DEAL) framework (Strycharz and Segijn 2022). This framework predicts how an instance of surveillance (i.e., surveillance episode) could affect message responses (e.g., brand attitude) through perceptions of surveillance (i.e., perceived surveillance) depending on individual differences (e.g., privacy cynicism). An example of a surveillance episode could be a personalized ad. Companies collect data on consumers about their preferences and behaviors online, and these data are used as input to optimize communication by, for example, personalizing advertising in line with someone's preferences (Brinson, Eastin, and Bright 2019; Kim and Huh 2017; Varnali 2021). When exposed to a (hyper)targeted message it may make people believe that their data are being collected and processed for this message.

Important to note is that a surveillance episode is about an individual's perceptions of surveillance rather than actual surveillance. For example, an act of surveillance might not be recognized as such (e.g., an individual does not recognize that their personal data are being collected and used as input for a message) or something might be seen as an act of surveillance while it is not (e.g., an individual thinks their personal data are being collected and used as input for a message, while that is not the case). Thus, what counts as a surveillance
episode depends on individual perceptions. Following the DEAL framework, a surveillance episode increases perceived surveillance. We refer to perceived surveillance as the perceptions of being watched or monitored by someone else (Segijn, Opree, and van Ooijen 2022; Xu et al. 2012). Indeed, people reported in in-depth interviews that data collection techniques for personalized advertising increased their perceptions of surveillance (Phelan, Lampe, and Resnick 2012).

According to the DEAL framework, the level of perceived surveillance may be determined by people’s knowledge or understanding about data collection and usage for persuasion, as that understanding impacts what the individual will classify as a surveillance episode. Several studies examining knowledge of personalized communication have found this knowledge to be low for data collection techniques (Smit, Van Noort, and Voorveld 2014) and personalized message strategies, such as online behavioral advertising (McDonald and Cranor 2010; Nill and Aalberts 2014; Smit, Van Noort, and Voorveld 2014) and synced advertising (Boerman and Segijn 2022; Segijn and van Ooijen 2021). Increased knowledge or awareness of personalization could help consumers recognize surveillance episodes. Indeed, previous research found that consumers who were informed on synced advertising perceived higher levels of surveillance when confronted with a synced advertising situation compared to consumers who were not informed (Segijn, Kim, et al. 2021; Segijn, Kim, et al. 2024).

In these studies, consumers’ understanding of surveillance practices was increased by providing information on personalization. Alternatively, consumers’ understanding of (personalized) advertising can also increase through consumers’ experiences with advertising (Friestad and Wright 1994; Strycharz and Segijn 2022). An example of this is when people worry that a device is listening to them when they receive relevant ads on social media related to previous offline conversations (Frick et al. 2021; Segijn, Strycharz, et al. 2024). A study found that consumers are more likely to believe this is happening when they have experienced it more often (Segijn, Strycharz, et al. 2024). Another example—in the context of the current study—would be when consumers repeatedly receive an ad that matches what they are currently watching on TV; they may think this is not a coincidence after multiple exposures. Therefore, repeatedly encountering an ad for which personal data are (seemingly) used as input should increase the chances of it being perceived as a surveillance episode and therefore lead to greater perceived surveillance. In line with the DEAL framework, we formulate the following hypothesis:

**H1:** The higher number of synced advertising exposures, the higher the perceived surveillance.

**Perceived surveillance, brand attitudes, and privacy cynicism**

In addition to the effect of (multiple) synced advertising exposures on perceived surveillance, we are interested in how this in turn affects consumers’ brand attitudes. According to the DEAL framework, perceived surveillance could affect how consumers feel (e.g., attitudes) toward a surveillance episode (e.g., personalized ad) (Strycharz and Segijn 2022). That is, as perceived surveillance refers to the uncomfortable feeling of being watched, it may result in increased resistance to the advertising message and hence negatively affect the impact of advertisement for which personal data are being used (e.g., Farman, Comello, and Edwards 2020; Segijn and van Ooijen 2021; Segijn, Opree, and van Ooijen 2022; Sifaoui, Lee, and Segijn 2023). However, following the DEAL framework, we argue that the relationship between perceived surveillance and responses to personalized messages may depend on individual dispositions toward privacy. Specifically, we predict that individual differences in privacy cynicism may attenuate the extent to which perceived surveillance negatively affects the persuasive impact of personalized messages.

Privacy cynicism is a cognitive coping mechanism that allows individuals to overcome or ignore privacy concerns and rationalize their use of privacy-invasive online services
(Hoffmann, Lutz, and Ranzini 2016; Lutz, Hoffmann, and Ranzini 2020; van Ooijen, Segijn, and Opree 2024). Hoffmann, Lutz, and Ranzini (2016) defined the concept of privacy cynicism as “an attitude of uncertainty, powerlessness, and mistrust toward the handling of personal data by digital platforms, rendering privacy protection subjectively futile.” This attitude may help individuals cope with the specific challenges of privacy threats by resigning from privacy protection altogether, while they still foresee certain risks or have certain concerns with data collection and usage (Lutz, Hoffmann, and Ranzini 2020). As a result, individuals may be more inclined to engage with privacy-invasive technologies and services. For instance, Segijn and van Ooijen (2021) measured privacy cynicism in a U.S.-based survey and found that privacy cynicism was related to an increased acceptance of online privacy-invasive practices, such as online profiling, location-based communication, and watermarking.

Highly cynical consumers appear to be aware of data collection methods (e.g., algorithms) and find them inappropriate but do not have the ability to cope with them (Voorveld, Meppelink, and Boerman 2023). A striking implication of high levels of privacy cynicism may be that individuals tend to engage in (privacy) risks even while having concerns with or feeling uncomfortable about the collection of their data (Hoffmann, Lutz, and Ranzini 2016; van Ooijen, Segijn, and Opree 2024). Hence, privacy cynicism can be one of the explanations of the incongruence between privacy-related affect and beliefs on one side and privacy related behaviors on the other side (Lutz, Hoffmann, and Ranzini 2020; van Ooijen, Segijn, and Opree 2024). In line with this notion, van Ooijen, Segijn, and Opree (2024) examined to what extent an individual’s threat appraisal and coping appraisal of a surveillance episode predicted their privacy protection behaviors and found that privacy cynicism moderated these effects negatively. The subjective appraisal of a privacy threat (i.e., perceived vulnerability, perceived benefits of disclosures), as well as the perceived ability to cope with that threat (i.e., response efficacy, response costs), were less strongly associated with actual privacy behaviors (i.e., privacy protection) when individuals had higher levels of privacy cynicism.

Thus, when consumers are cynical toward privacy issues, their concerns or perceived risks or perceptions of surveillance are not discounted but are rather perceived as out of their control and therefore inevitable. Privacy cynicism may therefore inhibit the impact of such beliefs and attitudes on privacy behaviors. Consumers may disclose their data online and accept that their data are being used for advertising purposes despite their high concerns about privacy issues or their perceptions of being watched (i.e., perceived surveillance) because they feel that they cannot prevent other parties from using their personal information (Acquisti, Friedman, and Telang 2006; Hargittai and Marwick 2016; Hoffmann, Lutz, and Ranzini 2016; van Ooijen, Segijn, and Opree 2024).

**Privacy cynicism and its role in advertising effectiveness**

In line with the previous reasoning, we argue that consumers’ level of privacy cynicism may influence their reaction to perceived surveillance in the context of data-driven message personalization. Specifically, when consumers become aware of a possible privacy violation (i.e., that their data are being used for personalized advertising), their perceptions of surveillance are expected to increase (Strycharz and Segijn 2022). For consumers low in privacy cynicism, these negative perceptions of surveillance may result in increased motivation to resist the persuasion attempt (i.e., showing less positive brand attitudes toward the advertised brand; Friestad and Wright 1994). Research has found that perceived surveillance in the context of personalized advertising increases reactance to the ad (Farman, Comello, and Edwards 2020) and induces other forms of resistance (Segijn, Kim, et al. 2021). As a result, surveillance in the context of personalized advertising can negatively impact brand attitudes (Farman, Comello, and Edwards 2020).
However, this may apply only to consumers with low levels of privacy cynicism. In line with the aforementioned work on privacy cynicism (Hoffmann, Lutz, and Ranzini 2016; Lutz, Hoffmann, and Ranzini 2020; van Ooijen, Segijn, and Opree 2024), consumers with high levels of privacy cynicism may disengage from privacy-protective behaviors, such as showing resistance to personalized ads, and therefore become more susceptible to persuasive attempts. For those consumers, their attitudes of frustration, hopelessness, and disillusionment regarding the act of protecting their privacy justify acceptance of privacy-invasive practices. Therefore, for those consumers who are high in privacy cynicism, perceptions of being watched may not result in negative responses toward an advertised brand. Upon acceptance of the privacy threat, the benefits that come with synced advertising (e.g., relevance, ad value, convenience) may outweigh the costs. Therefore, we argue that a personalized message may have a positive effect on brand attitude for consumers with high levels of privacy cynicism.

Thus, we expect that privacy cynicism has a moderating influence on consumers’ responses to synced ads when they are being confronted with increased perceived surveillance (i.e., privacy threat) such that only highly cynical consumers will not translate the negative perception of perceived surveillance into their attitudes toward the advertised brand. As a result, a synced ad will result in more positive brand attitudes when the synced ad produces high perceptions of surveillance (Figure 1). Thus, we formulate the following moderation hypothesis:

H2: (a) When privacy cynicism is low, high levels of perceived surveillance will lead to less positive brand attitudes; (b) when privacy cynicism is high, high levels of perceived surveillance will lead to more positive brand attitudes.

Method

Design

To test the proposed hypotheses, we conducted an online experiment with the number of synced advertising exposures as a between factor. We manipulated synced advertising exposures by exposing participants to three scenarios (i.e., an image in which an ad was displayed on a mobile device and a TV show description). In these scenarios, we varied number of times that the ad matched the TV show description: 0, 1, 2, or 3 times (e.g., a discussion on brushing teeth on TV and a toothpaste ad on the mobile device; Figure 2). In the other scenarios, the ad was the same but did not match the TV show description (e.g., a discussion on reading books on TV and a toothpaste ad on the mobile device; Figure 2). This way we could manipulate the number of synced advertising exposures while keeping the number of exposures to the advertising messages constant. In addition, we used three different product categories for the three advertisements as a replication factor and robustness check within subjects.
Figure 2. Scenario and smartphone images as displayed to the participants. Note. Participants were exposed to either (a) the synced or (b) the nonsynced scenario per brand. The brand logos used in this study were replaced in this figure with the text “brand.” The red dotted line was not presented to the participants and edited to clarify the differences between the scenarios.
**Sample**

For this study, a general sample of U.S. adults aged 18 years or older was selected from Dynata. To ensure that stimulus materials displayed properly on the screen that participants were viewing, those who reported taking this study on smartphones were excluded because of the small screen size. A total of 560 participants completed this study. However, those who failed more than three out of five attention checks, spent less than five minutes on this study, or reported their age as younger than age 18 were excluded in further data analysis (N = 33). As a result, a total of 527 participants were included in data analysis (Mage = 46.41, SDage = 17.04, 48.8% female, 0.4% other). An analysis of variance (ANOVA) and a chi-square test show that differences in participants' ages (F (3, 521) = .167, p = .919) and genders (χ² (3, N=526) = .509, p = .917) by the different number of synced ads are not significant, meaning that the randomization was successful.

**Procedure**

Participants were told that the purpose of this study was to understand their opinions on TV shows and mobile applications. Upon consent, all participants were exposed to three subsequent different descriptions of TV shows (i.e., a talk show, a game show, and a news program) and an accompanying image of a smartphone screen on which an app and a brand were displayed that either were synchronized to the TV show or not (Figure 2). Participants were randomly assigned to a condition in which they would be exposed to 0, 1, 2, or 3 synced ads. The three smartphone images were the same for all participants. Each banner ad featured a different product and brand (i.e., soap, toothpaste, kitchen detergent). Hence, each participant was exposed to all three different brands presented one after another in a randomized order (Figure 3). Each TV show description and accompanying smartphone image was displayed on a separate page (i.e., one scenario per page).

The TV show descriptions were manipulated to be synchronized or not synchronized to the product displayed in the mobile banner ads shown in the smartphone screen images (Figure 2). This was the only difference between the conditions. We decided to manipulate the TV show descriptions rather than the ads to keep ad exposure constant. Thus, any differences found could be described to whether the TV show was synced to the mobile ad rather than to brand or ad exposure differences, (repetition) which could drive attitudinal advertising effects (Schmidt and Eisend 2015). After being exposed to all three TV shows with accompanying smartphone images, participants were asked to fill out an online questionnaire. Participants were then debriefed and received an incentive for their participation.

**Pretests of stimulus materials**

All stimulus materials (i.e., brands, TV show descriptions) were selected based on extensive pretesting. First, we conducted an online pretest with U.S. adults via Amazon.com's Mechanical

![Figure 3. Scenario randomization overview.](image-url)
Turk (MTurk) to select brand names to be presented in the mobile banner ads ($N=40$, $M_{age}=39.10$, $SD_{age}=11.46$, 30.0% female). To rule out the potential effects of brand awareness or preexisting attitudes toward brands, we selected brands with which the study population were unfamiliar and had a neutral attitude toward (Geuens and De Pelsmacker 2017). In this pretest, participants were shown multiple existing foreign brands and were then asked to evaluate them in terms of familiarity and brand attitude. Based on the result, we selected one brand for each of the product categories and developed media scenarios using the selected brands.

Second, we conducted another online pretest with U.S. adults via MTurk ($N=60$, $M_{age}=36.78$, $SD_{age}=11.64$, 36.7% female) to develop one synchronized and one nonsynchronized media scenario for each of the brands selected in the previous pretest. Participants evaluated the degree of relatedness between the media scenario and the mobile banner ad (1 = Extremely unrelated, 7 = Extremely related). We selected three media scenarios (one per TV genre) that had one related conversation and one unrelated conversation to the mobile ads (Figure 2).

**Dependent variables**

Brand attitude was measured for each brand separately using six semantic differential items on a 7-point scale. 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). The items were averaged to create one measure for brand attitude (Cronbach's alpha = .96; $M=4.08$, $SD=1.45$).

Perceived surveillance was measured with four items on a 7-point Likert scale (Segijn, Opree, and van Ooijen 2022). Each question started with the prompt: “When I imagine the media situations presented earlier happening to me, I would feel the advertisers were . . .” (i.e., Looking over my shoulder, Watching my every move, Checking up on me, Entering my private space) (Cronbach's alpha = .94; $M=4.31$, $SD=1.62$).

Privacy cynicism was measured using three items taken from Choi, Park, and Jung (2018) on a 7-point Likert scale (1 = Totally disagree; 7 = Totally agree). The items are “I often doubt the significance of online privacy issues”; “I have become less interested in online privacy issues”; “I have become less enthusiastic in protecting information provided to online vendors” (Cronbach's alpha = .81; $M=3.63$, $SD=1.51$).

**Manipulation check**

The manipulation check asked to what extent participants perceived the mobile ads as relevant ($M=4.71$, $SD=1.76$), matched ($M=4.87$, $SD=1.73$), or personalized (Kalyanaraman and Sundar 2006; Cronbach's alpha = .89; $M=4.07$, $SD=1.46$) to the TV shows described in the media scenarios. All three measures were measured on a 7-point Likert scale, on which higher scores indicate more relevant, matched, or personalized.

**Results**

**Manipulation check**

As intended, regression analyses showed that the higher the synced advertising exposures (0 to 3), the more consumers perceived the ads as relevant ($F (1, 526) = 38.12$, $p < .001$, $B = .41$), matched ($F (1, 526) = 54.76$, $p < .001$, $B = .48$), and personalized ($F (1, 526) = 4.78$, $p = .029$, $B = .12$) to the media scenarios.
**Model testing**

To test the proposed model, we used PROCESS Model 14 (Figure 1) with 5,000 bootstrap samples. This allowed us to test the effect of synced advertising exposures on perceived surveillance (hypothesis 1) and the relationship between perceived surveillance and brand attitude under conditions of privacy cynicism (hypotheses 2a and 2b). We conducted three separate models testing brand attitude with a model for each brand. The different brands served as a replication factor and a robustness check of the model. In all models, we controlled for the order (first, second, third) in which the brand was shown to the participant to control for spillover effects (e.g., Chatterjee, Malshe, and Heath 2010).

The results showed a full moderated mediation effect of the number of synced advertising exposures on brand attitude mediated by perceived surveillance under intermediate to high conditions of privacy cynicism for all three brands (Figure 4, Table 1). In line with hypothesis 1, we found that the higher the number of synced advertising exposures, the higher the perceived surveillance (soap and toothpaste $B = .19$, SE $= .06$, 95% bias-corrected bootstrap confidence interval (BCBCI) [.07, .31], kitchen detergent $B = .18$, SE $= .06$, 95% BCBCI [.06, .31], Table 1). In addition, we used the Johnson–Neyman technique (Carden, Holtzman, and Strube 2017; Hayes 2013) to identify the regions of the moderator (privacy cynicism) where the relation between perceived surveillance and brand attitude is statistically significant and where it is not. In line with hypothesis 2(a), the Johnson–Neyman technique showed that for the lowest levels of privacy cynicism (soap $\leq 0.89$; toothpaste $\leq 1.27$; kitchen detergent $\leq 1.08$) perceived surveillance leads to a less positive brand attitude (Figure 4). The Johnson–Neyman technique showed that for intermediate to high levels of privacy cynicism (soap $\geq 3.21$; toothpaste $\geq 3.46$; kitchen detergent $\geq 3.17$), the relationship between perceived surveillance and brand attitude is significant and in a positive direction (Figure 4). Finally, the results showed no direct effect of multiple synced advertising exposures on brand attitude for any of the three brands (soap $B = −0.01$, SE $= .05$, 95% BCBCI [−.11, .10]; toothpaste $B = .00$, SE $= .05$, 95% BCBCI [−.10, .11]; kitchen detergent $B = .03$, SE $= .05$, 95% BCBCI [−.08, .13], Table 1).

**Discussion**

With the recent technological advancements, it has become possible to personalize messages across media in real time, a process known as synced advertising (Segijn 2019). Considering the potential for digital advertising to enhance consumer responses (e.g., brand attitude) on one hand and the potential backlash due to privacy issues for some consumers on the other, it is important to conduct a more comprehensive investigation into synced advertising effects. This will expand our understanding of whether and how synced advertising leads to more positive brand attitudes. Therefore, the aim of the current study was to examine whether the multiple synced advertising exposures would affect consumer responses (i.e., brand attitude) via perceived surveillance under conditions of privacy cynicism.

In line with expectations, the results showed that the higher the number of synced advertising exposures, the higher consumers’ perception of being surveilled. Hence, hypothesis 1 was supported. In addition, we found that for participants with very low levels of privacy cynicism, the relationship between perceived surveillance and brand attitudes was negative, supporting hypothesis 2(a). Moreover, we found that more perceived surveillance led to more positive brand attitudes for participants with intermediate to high levels of privacy cynicism, supporting hypothesis 2(b). We replicated this finding for three different brands, which increases the robustness of the findings. This result could be interpreted that when experiencing surveillance (i.e., a privacy threat), it will lead to less positive attitudes for consumers with the lowest levels of privacy cynicism; but intermediate to high levels of privacy cynicism seem to not translate the
Figure 4. The moderation of privacy cynicism on the relationship between perceived surveillance (PS) and brand attitude (BA) for the (a) soap, (b) toothpaste, and (c) kitchen detergent brand. Note. For any values of privacy cynicism for which the confidence band does not contain zero, the effect of perceived surveillance on brand attitude is significant.
negative perception of perceived surveillance into their attitudes toward the brand and seem to be more susceptible to persuasive attempts. Highly cynical consumers may accept the costs (e.g., privacy threat) of synced advertising, while the benefits contribute to a positive effect. Future research is needed to further validate this claim by examining the costs and benefits of this personalization strategy and their impact on persuasion.

The findings of this study have at least three implications for theory. First, this is the first study, to our knowledge, to empirically test the DEAL framework including different personalized advertising exposures. The design of the study allowed us to test how a repeated set of synced advertisements could increase levels of perceived surveillance and consequently affect brand attitudes. In line with the dataveillance framework, we found an indirect effect on brand attitude through perceived surveillance. This study should be seen as a stepping-stone for future research on surveillance in personalized advertising and its responses by testing the theoretical relationships between the variables. The design of the current study contributed to the internal validity of the tested relationships and provided first empirical evidence for the DEAL framework.

Second, the results advance theory on synced advertising, which is a relatively novel data-driven digital advertising strategy, emphasizing the need for empirical scientific studies on the topic. A first study into synced advertising and brand attitudes found an indication of a positive relationship compared to no exposure (Segijn and Voorveld 2021). The current study extends our knowledge on this relationship by showing that these relationships hold for multiple synced

<table>
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<th>Product</th>
<th>Relationship</th>
<th>Indirect Effect</th>
<th>B</th>
<th>SE</th>
<th>p Value</th>
<th>LLCI</th>
<th>ULCI</th>
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<td>Perceived surveillance × privacy cynicism → brand attitude (b3)</td>
<td>.09</td>
<td>.02</td>
<td>&lt;.001</td>
<td>.05</td>
<td>.13</td>
<td></td>
</tr>
<tr>
<td>Toothpaste</td>
<td>Number of exposures → Perceived surveillance (a)</td>
<td>.02</td>
<td>.19</td>
<td>.06</td>
<td>.003</td>
<td>.07</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>Perceived surveillance → brand attitude (b1)</td>
<td>−0.24</td>
<td>.09</td>
<td>.007</td>
<td>−0.41</td>
<td>−0.06</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Privacy cynicism → Brand attitude (b2)</td>
<td>−0.11</td>
<td>.11</td>
<td>.341</td>
<td>−0.33</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived surveillance × privacy cynicism → brand attitude (b3)</td>
<td>.09</td>
<td>.02</td>
<td>&lt;.001</td>
<td>.04</td>
<td>.13</td>
<td></td>
</tr>
<tr>
<td>Kitchen detergent</td>
<td>Number of exposures → Perceived surveillance (a)</td>
<td>.02</td>
<td>.18</td>
<td>.06</td>
<td>.004</td>
<td>.06</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td>Perceived surveillance → brand attitude (b1)</td>
<td>−0.23</td>
<td>.08</td>
<td>.007</td>
<td>−0.40</td>
<td>−0.06</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Privacy cynicism → Brand attitude (b2)</td>
<td>−0.18</td>
<td>.11</td>
<td>.117</td>
<td>−0.40</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived surveillance × privacy cynicism → brand attitude (b3)</td>
<td>.10</td>
<td>.02</td>
<td>&lt;.001</td>
<td>.05</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of exposures → Brand attitude (c')</td>
<td>.03</td>
<td>.05</td>
<td>.612</td>
<td>−0.08</td>
<td>.13</td>
<td></td>
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</table>

Note. The bolded relationships represent the hypothesized relationships. Letters between parentheses (e.g., a, b1) indicate tested relationship from PROCESS Model 14. Table 1 represents unstandardized coefficients (B), standard error (SE), p values, lower-level confidence intervals (LLCI), and upper-level confidence intervals (ULCI); 95% CI is calculated on 5,000 bootstraps. The indirect effect is calculated at the mean level of privacy cynicism. See the results from the Johnson–Neyman technique for the regions of significance.
advertising exposures but only for consumers with intermediate to high levels of privacy cynicism. In addition, we found some evidence that synced advertising could result in less positive brand attitudes for consumers with the lowest levels of privacy cynicism when confronted with multiple synced advertising exposures. To the best of our knowledge, this is the first study that examines the effects of multiple synced advertising exposures and the extent to which they influence consumer responses. This research is important because consumers have limited knowledge of synced advertising (Boerman and Segijn 2022; Segijn and van Ooijen 2021), and multiple synced advertising exposures might be crucial for generating awareness of this strategy and evoking consumer responses, such as brand attitudes.

Moreover, by examining how consumers respond to ads depending on the number of synced advertisements, this study provides insights into the accuracy trade-off (Segijn 2019; Yun et al. 2020). The accuracy trade-off states that effectiveness of synced advertising depends on balancing the number of synced advertising exposures without raising concerns or costs related to privacy (e.g., perceived surveillance). According to this trade-off, multiple synced advertising exposures could lead to more negative consumer responses. First evidence that multiple exposures could backfire in terms of brand attitude was found. We tested up to three synced advertising exposures of three different brands. It could be expected that this relationship will be stronger for more than three exposures of different brands or for multiple exposures of the same brand. We did not find a direct effect of multiple exposures on brand attitudes. However, this might be explained by the fact that we used fictitious brands and one exposure for each brand. Multiple exposures of the same brand might be necessary to affect attitudes (Schmidt and Eisend 2015; Segijn and Voorveld 2021). Future research should further examine the accuracy trade-off by expanding the number of exposures and by looking into multiple synchronized ads by the same versus different brands.

In addition, we presented the brands in the context of three different apps (e.g., weather app, sudoku app, fitness app). Although different apps may have different demands on participants’ cognitive resources and therefore may result in different effects, the apps in this experiment were provided only as context and were not part of the task (e.g., participants were exposed to an image of a weather app and were not asked to engage with an interactive weather app). The context of the brand was consistent throughout the experiment (e.g., the soap brand was always presented in the context of the weather app), as well as exposure to each context was consistent across participants (e.g., all participants were exposed to all three brands and their respective contexts). That we find similar results for all three brands with their respective contexts makes us more confident that the context in the current study did not significantly impact the results. However, future research is needed to examine if the context (e.g., type of app) may impact effects when participants engage with the apps.

Further, this study used scenario-based manipulation of synced advertising exposures, which helps us further understand what could happen. Because participants were asked to imagine the situation in which they are being exposed to synced advertising rather than actually encountering a synced advertisement while watching TV, their responses in this study might differ from those in real-life situations. Possibly, the nature of the manipulation might on one side have increased awareness of synced advertising among participants, which could increase the found effects of synced advertising. On the other side, scenario-based manipulation might decrease the experienced personal privacy consequences for participants, which might have decreased the found effects of synced advertising. Previous research, however, found consistent findings regarding levels of perceived surveillance after exposure to synced advertising in both a scenario-based experiment (Segijn, Kim, et al. 2021) and lab experiment (Segijn, Kim, et al. 2024). Nevertheless, future research in a real-life synced advertising setting could further examine the claims in the context of multiple synced ad exposures.

The findings of this study provide useful practical implications. First, the results present a double-edged sword for digital advertisers. On one hand, the findings of this study suggest that when the aim is to increase positive brand attitudes, using multiple synced ads in a row may
lead to the desired outcomes, albeit only among consumers who are relatively high in privacy
cynicism. For consumers with the lowest levels of privacy cynicism, it could lead to less positive
brand attitudes. The group of highly privacy cynical consumers is characterized by higher levels
of privacy concerns but less ability to cope with privacy issues (e.g., Internet skills). Because
such personal characteristics were found to be more indicative of this group of consumers than
demographics, practitioners may want to consider including such factors beyond the standard
targeting variables (Voorveld, Meppelink, and Boerman 2023). On the other hand, the finding
that personalized advertising may be more effective for consumers who are highly cynical about
protecting their privacy raises the question: To what extent should advertisers consider the
ethical side of personalized advertising in terms of consumer privacy? That is, consumers may
be concerned about their privacy when encountering personalized ads but may refrain from
privacy-protective strategies (e.g., protecting their data or resisting advertisements) because they
feel they have no control over how their data are being used (van Ooijen and Ursic-Vrabec
2019). Possibly, this discrepancy between consumer needs and their coping behaviors can be
decreased by advertisers by increasing transparency about data usage, for instance, by means of
disclosures (e.g., Aguirre et al. 2015).

Second, the findings have implications for educational institutions and public policy. We argue
that consumers with intermediate to high levels of privacy cynicism are more susceptible to
synced advertising when they perceive surveillance. This is problematic because it seems that
these consumers are ignoring perceived threats as a coping strategy in times when it is important
to defend themselves. Therefore, educational institutions should pay attention to advertising
literacy programs to improve consumers’ ability to cope with online privacy threats as well as
to cope with this new form of digital advertising. In addition, advertising literacy programs
should be designed to empower consumers to protect their online privacy and prevent them
from becoming cynical over privacy issues, which may result in a neglect of protective behavior
and more susceptibility to synced advertising. To this end, governments can also use the insights
of this study to update privacy regulations, protect consumers from privacy violations, and foster
data security. In sum, synced advertising seems to be a promising personalized messaging strategy
for consumer responses. However, more attention is needed to privacy issues related to synced
advertising and how these issues may impact the consumer and effectiveness of the message.

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Disclosure statement

No potential conflicts of interest were reported by the author(s).

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Statement
We confirm that all authors have agreed to the submission and that the paper has not been submitted to any other journal for publication and has not been previously published.

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