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Awareness and Perceived Appropriateness of Synced Advertising in Dutch Adults

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ABSTRACT

This study provides insight into Dutch adults' awareness and perceptions of cross-media personalized advertising with a focus on synced advertising (SA). A survey among a representative sample of the Dutch population ($N=1,994$) shows that the majority of people (>70%) are familiar with the collection, use, and sharing of information about their media behavior. People are less familiar with SA, which involves presenting targeted ads to consumers based on their current media behavior. Less than half of our sample (45%) were familiar with SA, and only 29% had ever experienced SA. The majority (75%) found SA (very) inappropriate. Moreover, our results showed that adults with low conspiracy mentality, those not concerned about their privacy, older adults, less-educated adults, and women are less aware of the collection, use, and sharing of media behavior and are less familiar with SA, and thus could benefit from literacy interventions to improve their understanding and resilience.

KEYWORDS



Appropriateness; awareness; personalized advertising; survey; synced advertising

Data-driven personalized advertising has become increasingly common in digital advertising. An important trend within data-driven advertising is cross-media personalization, which involves personalizing ads on one medium while using data about behavior learned from another medium. For instance, when Consumer A searches for sneakers on her laptop, it leads to an ad for sneakers in her Instagram timeline on her phone later (i.e., online behavioral advertising [OBA] across media; Boerman, Kruijkemeier, and Zuiderveen Borgesius 2017). If this happens in real time and ads are targeted based on current media behavior (e.g., an ad for sneakers in Consumer A's Instagram timeline while watching a TV program on sneakers), this practice is called synced advertising (SA; Segijn 2019).

Data-driven advertising has raised concerns about the collection, use, and sharing of personal data and about consumer privacy among advertisers, academics, regulators, and consumer organizations (e.g., Brinson, Eastin, and Cicchirillo 2018; Daems, De Pelsmacker, and Moons 2019; Van Ooijen and Vrabec 2019).

Knowledge of personalization techniques is vital for consumer empowerment, and research has shown that higher privacy literacy likely leads to more privacy protection (e.g., Ham 2017, Desimpelaere, Hudders, and Van de Sompel 2021). Therefore, it is important to gain insights into people's understanding of new forms of data-driven advertising, such as cross-media personalization. Moreover, it is imperative to understand which people are the least aware of, familiar with, and critical of these practices to identify who could benefit most from literacy interventions (Park 2013).

We contribute to the literature by using a nationally representative sample to gain insights into (1) Dutch adults' awareness of the collection, use, and sharing of information about their media behavior; (2) Dutch adults' familiarity with and perceptions of SA; and (3) the individual characteristics (e.g., conspiracy mentality, privacy concerns, and Internet skill levels) that are related to familiarity and perceptions. As most research focuses on U.S. citizens, our study

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contributes to the literature by providing a European perspective, which is particularly relevant given the strict privacy regulations in the European Union under the General Data Protection Regulation (GDPR). Moreover, this study contributes to a better understanding of people's persuasion knowledge and perceptions of a new data-driven advertising strategy (i.e., SA) and of the role of relevant, novel individual characteristics, such as conspiracy mentality.

Awareness and Perceptions of Personalized Advertising

How people respond to and cope with advertising depends on their knowledge of the persuasion tactics used in advertising (Friestad and Wright 1994). Prior research has shown that people lack knowledge and hold misconceptions about data-driven advertising, such as OBA and SA (McDonald and Cranor 2010; Segijn and Van Ooijen 2022; Smit, Van Noort, and Voorveld 2014). These insights mainly stem from research among U.S. consumers, with the exception of Smit, Van Noort, and Voorveld's (2014) study, which was conducted among Dutch consumers before the introduction of the GDPR. The GDPR specifically states that consumers must be informed about data collection practices (Van Ooijen and Vrabec 2019), which increases their awareness of these practices (Segijn et al. 2021). Therefore, we ask the following research question:

RQ1: To what extent are Dutch adults aware of the collection, use, and sharing of information about their media behavior?

Persuasion knowledge is developmentally contingent, and people learn about persuasive tactics from firsthand experience and indirectly through conversations with others, as well as from media coverage (Friestad and Wright 1994). Although people may be familiar with personalized advertising in general, they may not know of the capacity for advertisers to use current media behavior to personalize ads on another medium. Indeed, research showed that U.S. adults lack knowledge of SA, and their confidence in that knowledge is low (Segijn and Van Ooijen 2022). This finding may indicate a lack of familiarity and experience with SA, which can hinder the development of persuasion knowledge about SA. To get more insights into Dutch adults' familiarity and experience, we ask:

RQ2: To what extent (a) are Dutch adults familiar with SA? (b) And have they ever experienced SA?

People are assumed to cope with advertising by accessing their persuasion knowledge to evaluate

whether the tactic and the message align with their own goals (Friestad and Wright 1994). In the context of personalized advertising, this process is manifested in the privacy calculus (Dinev and Hart 2006), in which people weigh the benefits of a personalized ad (e.g., more useful and relevant messages) and the harms of the tactic (e.g., use of personal data, privacy infringement; Bol et al. 2018, Ham and Nelson 2016, Segijn and Van Ooijen 2022). This calculus is also reflected in the personalization paradox: Personalization increases ad effectiveness (e.g., click-through rates) because an ad is more personally relevant to the consumer but also decreases effectiveness because it makes people feel vulnerable (Aguirre et al. 2015; Brinson, Eastin, and Cicchirillo 2018).

Prior research has shown that when people are asked about their perceptions, they find personalized advertising (Boerman, Kruikemeier, and Bol 2021) and the various personalization techniques that enable SA (Segijn and Van Ooijen 2020) unacceptable. In the context of SA, people may believe that an individual's media behavior is very personal and that tapping into media behavior is too intrusive. This finding would suggest that the harm caused by SA may outweigh the benefits. We therefore ask:

RQ3: To what extent do Dutch adults find SA appropriate?

Role of Individual Characteristics

We explore which individual traits may be related to people's knowledge and perceptions of personalized advertising based on media behavior. First, we introduce a person's generic beliefs in conspiracy theories—or conspiracy mentality (Bruder et al. 2013)—as a likely influential characteristic. As personalized advertising, such as SA, requires the collection and processing of personal data by commercial companies, it is linked to feelings of intrusiveness (Van Doorn and Hoekstra 2013), vulnerability (Aguirre et al. 2015), and surveillance (Segijn and Van Ooijen 2020). We propose that individuals with a higher propensity to believe in conspiracy theories are more likely to notice, understand, and critically evaluate data-driven commercial practices.

Second, we examine privacy concerns, defined as the extent to which people worry about their personal information being disclosed to others (Baek and Morimoto 2012). Privacy concerns play an important negative role in the acceptance and effectiveness of personalized advertising (Boerman, Kruikemeier, and Zuiderveen Borgesius 2017). We argue that people

with high levels of privacy concerns may be more familiar with the collection, use, and sharing of their media behavior for personalized advertising and are probably more critical toward the practice.

Third, a person's Internet skills (e.g., the ability to navigate the Internet and look for information online; Van Deursen, Helsper, and Eynon 2016) can be an important indicator for how well a person understands how information is processed online. As a higher level of Internet competency decreases the likelihood of clicking on a personalized ad (Kim and Huh 2017), we argue that Internet skills could be an important predictor of a person's awareness of the collection, use, and sharing of media behavior and familiarity with and perceptions of SA.

Fourth, we include the frequency of using smartphones, social media, and Web browsers. The more people use these media, the more they are confronted with the collection of their (media behavior) data, and the more likely they are to be targeted with personalized ads on these devices. Therefore, we argue that a greater frequency of using these media increases the chance that people are aware that personal data are collected, used, and shared. In addition, because mobile phone dependency is related to the acceptance of personalized techniques (Segijn and Van Ooijen 2020), we expect that the frequency of use is positively related to SA perceptions.

Finally, previous research has shown that age, gender, and education play a role in people's understanding and evaluation of personalized advertising. For instance, studies have found generational differences regarding the acceptance of personalization techniques, with older generations being less accepting (Segijn and Van Ooijen 2020); in addition, men and more highly educated people have reported more knowledge of personalization techniques (Smit, Van Noort, and Voorveld 2014, Segijn and Van Ooijen 2022).

RQ4: How are individuals' conspiracy mentality; privacy concerns; Internet skills; use of smartphones, social media, and Web browsers; age; gender; and education related to awareness and perceptions of SA?

Method

The data reported in this study are part of a larger cross-sectional survey on digital developments in communication (Araujo et al. 2020). Respondents were recruited through a commercial survey company. We used quota sampling on age, region, and gender

interlocked with education to achieve a representative sample of the adult population (18 years or older) in the Netherlands. We excluded those who completed the survey too quickly to have engaged with it, as well as respondents who were younger than 18, did not consent to the use of their data, or failed both attention checks. The final sample consisted of 1,994 responses.

Table 1 presents all measures. All 547 open answers were coded by one of the researchers, and 18% were double coded by the second researcher (intercoder agreement was good; Cohen's kappa = 0.80, $p < .001$). We excluded invalid answers (e.g., "Don't know" [$n = 217$]; mention of a brand/product only [$n = 146$]), which left 211 useful answers.

Results

Regarding research question 1, we found that most respondents were aware that companies collect, use, and share information about their media use ($M = 5.26$, $SD = 1.30$). Focusing on scores 5 through 7 (Figure 1), 77% believed that companies collect information about media use, 80% believed that media behavior data are used to show specific ads on another medium, and 70% believed that these data are shared with other companies.

Concerning research question 2, we find that 45% of respondents in our sample said they were familiar with SA, and 29% had experienced SA. However, when asking these respondents for a concrete example, only 22% of the answers reflected a form of cross-media advertising or SA. Most of these answers concerned personalized advertising across different media (e.g., "Ad on social media for duvet covers after seeing it on TV"). Some of the answers did reflect SA (e.g., "I watched a cooking show with a specific kind of pans and got the same pans on my phone at the same time"). In addition, 37% were examples of OBA on the same medium ("I searched for kitchens on the www, after that on [Facebook] ad for it" and "An online purchase. After that, advertising about such things"), and 38% of the answers reflected the idea of companies listening to conversations ("It was a clothing brand. While I was talking about the brand, I directly got a message from the brand"). Finally, 3% of the answers concerned location-based advertising ("Electric bikes after I went to a specific store").

Regarding research question 3, results showed that the majority of Dutch adults find SA inappropriate ($M = 2.74$, $SD = 1.43$). Figure 1 shows the distribution of SA appropriateness: 75% find SA inappropriate

Table 1. Overview of measures and descriptive statistics.

Construct	Measure	Statistics	Reference
Age	How old are you?	M = 46.45, SD = 14.75 Min = 18, Max = 77	
Gender	What is your gender? (Recorded: 0 = Male or Other, 1 = Female)	49.4% female 50.4% male 0.3% other	
Education	What is the highest degree of education that you have successfully completed? (7 country-specific categories, ranging from 1 = None or general/basic education level to 7 = Master's degree or PhD)	M = 4.76, SD = 1.94; 19.6% lower education, 40.7% middle education, 39.7% higher education	
Tech use frequency	In the past month, how often did you use the following devices/services? <ul style="list-style-type: none"> Smartphone (e.g., iPhone, Android) Social media (e.g., Facebook, Instagram, Twitter, YouTube, WhatsApp, Snapchat, TikTok) Web browser (e.g., Chrome, Safari, Firefox) (1 = Never, 2 = Once a month, 3 = 2–3 times a month, 4 = Weekly, 5 = Daily, 6 = Multiple times a day)	Smartphone: M = 5.55, SD = 1.04 Social media: M = 5.04, SD = 1.37	
Privacy concerns	When I am online, I am worried that <ul style="list-style-type: none"> my personal data (such as browsing behavior, name or location) is being misused. others keep track of what I do. my data are not stored safely. my data are distributed to, for example, companies. my personal data can be accessed by people I do not know. (1 = Strongly disagree, 7 = Strongly agree)	Web browser: M = 5.24, SD = 1.23 $\alpha = 0.93$; M = 4.65, SD = 1.28	Adapted from Kruikemeier, Boerman, and Bol (2020)
Internet skills	To what extent do you agree with the following statements? <ul style="list-style-type: none"> I find it difficult to decide what the best keywords are to use for online searches. I find it hard to find a website that I have visited before. I get tired when looking for information online. Sometimes I end up on websites without knowing how I got there. I find the way in which many websites are designed confusing. (1 = Strongly disagree, 7 = Strongly agree)	$\alpha = 0.84$; M = 2.93, SD = 1.20	Adapted from Van Deursen, Helsper, and Eynon (2016)
Conspiracy mentality	(1 = Strongly disagree, 7 = Strongly agree) Below are five statements. How likely are these to be correct on a scale from 0% (Definitely not) to 100% (Definitely)? <ul style="list-style-type: none"> Many very important things happen in the world which the public is never informed about. Politicians usually do not tell us the true motives for their decisions. Government agencies closely monitor all citizens. Events which superficially seem to lack a connection are often the result of secret activities. There are secret organizations that greatly influence political decisions. (0 – 100 slider: 0 = Certainly not, 30 = Unlikely, 50 = I don't know, 70 = Probably, 100 = Certain)	$\alpha = 0.86$; M = 52.46, SD = 21.58	Bruder et al. (2013)
Awareness of collection, use, and sharing of media behavior	The next statements concern information about your media use. For example, this includes information about what you are watching on TV or what you are listening to on the radio. I believe that companies <ul style="list-style-type: none"> ... collect information about my media use. ... use information about my media use to show me specific ads on another medium (for instance, on your mobile phone). ... share information about my media use with other companies. (1 = Strongly disagree, 7 = Strongly agree)	$\alpha = 0.89$; M = 5.26, SD = 1.30	Based on Boerman, Kruikemeier, and Bol (2021); Ham (2017)

Synced advertising familiarity and experience	Imagine that you are watching a TV show on traveling. The TV program shows a report on Curaçao. At the same time, you also use your phone to read the news. In the news app you see an advertisement for a TUI flight to Curaçao. This ad is shown to you because an advertising company has specifically linked it to you based on what is being said in the television show. If you had watched a different television program, or if you had not watched television, another ad would have appeared in the app. Were you familiar with this possibility? Have you ever experienced this? (0 = No, 1 = Yes) If answered Yes, this was then followed by an open question asking them to tell which advertisement they saw and why they thought they saw that ad. (Answers coded into categories: 1 = SA or personalization across media, 2 = Online behavioral advertising, 3 = Companies listening to conversations, 4 = Location-based personalization, 777 = Not useful or don't know, 888 = Just mentions product or brand)	45.1% familiar 28.8% experience	McDonald and Cranor (2010); Segijn and Van Ooijen (2022)
Synced advertising appropriateness	To what extent do you think that the collection and use of their media use to show you specific ads is: (7-point semantic differential scales: <i>Inappropriate/Appropriate; Unacceptable/Acceptable; Undesirable/Desirable; Unfair/Fair; Scary/Not scary</i>)	$\alpha = 0.91$; $M = 2.74, SD = 1.43$ (Higher scores represent more positive perceptions.)	Boerman et al. (2018)

Note. Measures are in order of appearance in survey.

(scores 1 to 3.8), and only 8% find SA appropriate (scores 5 to 7).

To answer research question 4, we ran linear regression analyses for awareness of the collection, use, sharing of media behavior and SA appropriateness, and we ran logistic regression analyses for SA familiarity and SA experience. The results (Tables 2 and 3) showed that several characteristics were significantly related to the four dependent variables. Conspiracy mentality was positively related to awareness of the collection, use, and sharing of media behavior, SA familiarity, and SA experience and negatively related to appropriateness. Privacy concerns were positively related with awareness and SA familiarity and negatively related with SA appropriateness. Internet skills were not significantly related to awareness and perceptions of SA. Greater frequency of the use of Web browsers increased awareness and SA familiarity; the frequency of using smartphones and social media increased the likelihood of having experience with SA; and the use of social media was positively related to SA appropriateness. Age had a negative relationship with all dependent variables. In addition, women were less aware of the collection, use, and sharing of media behavior and less familiar with SA but more critical toward it. Finally, less educated adults were less aware of the collection, use, and sharing of their media behavior and less familiar with SA.

Conclusion and Discussion

This study shows that the majority of Dutch adults (>70%) are familiar with the collection, use, and sharing of information about their media behavior. This is in line with the GDPR, which requires companies to inform consumers that—and how—data collection takes place. In addition, 45% of Dutch adults were familiar with personalized ads based on their current media behavior (SA), and 29% had experienced SA. These findings suggest that Dutch adults seem to have developed some level of persuasion knowledge of SA despite having little experience with the tactic, possibly from media coverage or secondhand experience. These results add to the literature by using a non-U.S. sample, which is important given differences between countries' privacy regulations.

Many of our respondents connected personalized advertising based on media behavior to companies listening to their conversations, which is labeled as the surveillance effect (Frick et al. 2021). As there is no empirical evidence that smart devices listen to

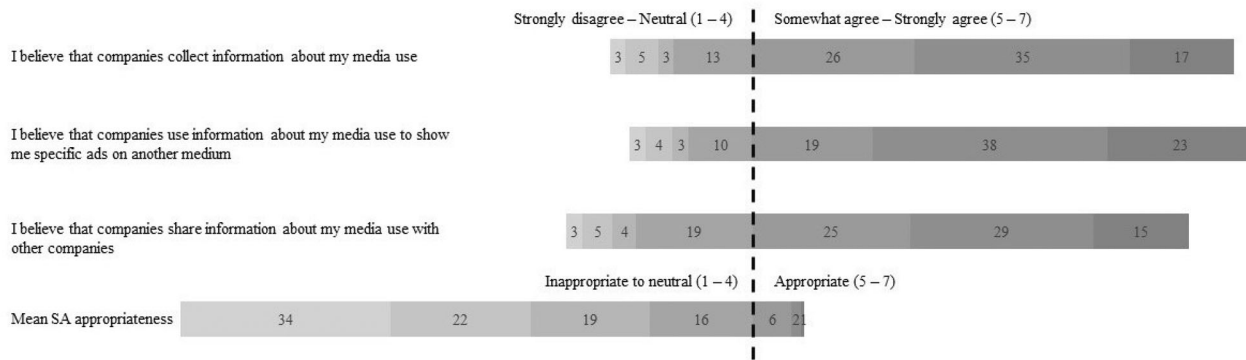


Figure 1. Percentage of scores for awareness items and mean synced advertising (SA) appropriateness.

Table 2. Results of linear regression analyses predicting awareness and appropriateness.

Variable	Awareness Collection, Use, Sharing of Media Behavior		Synced Advertising (SA) Appropriateness	
	B Coefficient (SE)	Beta	B Coefficient (SE)	Beta
Constant	3.17 (0.28)***		4.39 (0.30)***	
Conspiracy mentality	0.01 (0.00)***	0.24	-0.00 (0.00)*	-0.05
Privacy concerns	0.17 (0.02)***	0.17	-0.29 (0.02)***	-0.26
Internet skills	-0.05 (0.02)†	-0.04	-0.01 (0.03)	-0.01
Frequency of using smartphone	0.04 (0.03)	0.03	0.03 (0.03)	0.02
Frequency of using social media	0.03 (0.02)	0.03	0.08 (0.02)**	0.08
Frequency of using Web browser	0.08 (0.03)**	0.08	0.02 (0.03)	0.02
Age	-0.01 (0.00)**	-0.08	-0.02 (0.00)***	-0.17
Gender (women)	-0.24 (0.06)***	-0.09	-0.39 (0.06)***	-0.14
Education	0.07 (0.02)**	0.08	0.04 (0.02)†	0.04
F(df)	27.78 (9)***		35.35 (9)***	
Adjusted R ²	0.11		0.13	

***p < .001; **p < .01; *p < .05; †p < .10.

Table 3. Results of logistic regression analyses predicting synced advertising (SA) familiarity and experience.

Variable	SA Familiarity		SA Experience	
	B Coefficient (SE)	Odds Ratio	B Coefficient (SE)	Odds Ratio
Constant	-1.26 (0.48)**	0.29	-3.01 (0.59)***	0.05
Conspiracy mentality	0.01 (0.00)***	1.01	0.02 (0.00)***	1.02
Privacy concerns	0.11 (0.04)**	1.11	0.12 (0.04)**	1.12
Internet skills	-0.02 (0.04)	0.98	0.05 (0.05)	1.05
Frequency of using smartphone	-0.01 (0.05)	0.99	0.20 (0.07)**	1.23
Frequency of using social media	0.06 (0.04)	1.06	0.14 (0.05)**	1.15
Frequency of using Web browser	0.09 (0.05)*	1.09	-0.03 (0.05)	0.97
Age	-0.02 (0.00)***	0.98	-0.03 (0.00)***	0.97
Gender (women)	-0.54 (0.10)***	0.58	-0.01 (0.11)	0.99
Education	0.11 (0.04)**	1.12	0.06 (0.04)	1.06
Chi-square (df)	135.41 (9)***		186.96 (9)***	
Nagelkerke R ²	0.09		0.13	

***p < .001; **p < .01; *p < .05.

conversations and transmit these recordings to companies for the purpose of personalizing online ads (Frick et al. 2021), our findings suggest that people’s persuasion knowledge could be based on folk theories or misinformation. Although our results provide important insights into the current level of knowledge of personalization and data collection practices, future research should further investigate how consumers develop such knowledge, the consequences of their (mis)perceptions, and ways to combat misinformation about advertising.

Our study makes an important theoretical contribution by introducing conspiracy mentality as a relevant personal trait that should be taken into consideration in the context of data-driven advertising. We found that a person’s belief in conspiracy theories is related to awareness of data-driven advertising techniques and critical evaluations of such practices. Future research should further examine whether conspiracy mentality plays an important (moderating) role in the effectiveness of personalized advertising.

Moreover, the majority of Dutch adults (75%) find SA (very) inappropriate. In light of the privacy calculus, this finding suggests that tapping into personal media behavior for ad personalization is believed to be too intrusive (Segijn and Van Ooijen 2022) and thus potentially outweighs the benefits of personalization. Importantly, these negative perceptions may also spill over to brands (Aguirre et al. 2015), suggesting that brands using SA could be harmed by it. More research on the unintended side effects of SA is needed.

Furthermore, our results suggest that adults with low conspiracy mentality, those not concerned about their privacy, older adults, less-educated adults, and women are less aware of the collection, use, and sharing of media behavior and less familiar with SA. This suggests that these individuals could benefit from literacy interventions to improve their understanding and resilience.

As this study concerns cross-sectional data, we should be careful in interpreting the causality of our findings. For instance, it could be that people who have more experience with SA become more concerned about their privacy, and that being aware that their data are being collected, used, and shared causes a growth in conspiracy mentality. Further, longitudinal or experimental research is needed to gain more insights into the causality of these relationships.

Finally, respondents' open answers highlight an important methodological implication when using self-reported awareness measures. Judging from the open answers, SA familiarity may be lower than people report. As only 22% of the valid answers reflected some kind of cross-media personalized advertising (including SA), people may overestimate their own knowledge and conflate SA with other personalization techniques. Researchers should be careful when using and drawing conclusions based on self-reported awareness of personalization techniques.

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