

“Are you spying on me?” The Impact of Data Sharing Extent on Consumers’ Perceived
Surveillance and Responses Toward Online Behavioral Advertising

A THESIS

SUBMITTED TO THE FACULTY OF THE
UNIVERSITY OF MINNESOTA

BY

Jingren Li

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

Advisor: Dr. Haseon Park

June 2024

Acknowledgments

I would like to begin by expressing my heartfelt gratitude to my advisor, Dr. Haseon Park, whose great support guided me from the very beginning to the end to complete this thesis project. Her timely feedback, transparent communication, and boundless patience greatly helped me to navigate through various challenges and complete my M.A. degree.

Additionally, I extend my gratitude to Dr. Claire Segijn for her constructive suggestions in helping me formulate the research question and improve the experimental design of this thesis project. I am also thankful to Dr. Haoran Li for his feedback in the data analysis phase of this thesis project.

I am also deeply thankful to the faculty members and colleagues at the Hubbard School of Journalism and Mass Communication, University of Minnesota Twin Cities. Special thanks to Dr. Matt Carlson, the Director of Graduate Studies, for giving me much support and care during my past two years in Minnesota. I am also grateful to all other faculty members and colleagues who provided me invaluable guidance in conducting high-quality academic research.

Lastly, I extend my heartfelt thanks to my parents, friends, and everyone who gave me support and care throughout this journey.

I wish you all the best in your future endeavors.

Abstract

Online behavioral advertising (OBA) refers to the advertising practices of using consumers' online activity data, such as their search and web browsing histories, to deliver personalized digital ads (Federal Trade Commission, 2009a). Although OBA enhances the advertising effects by delivering ads that are more personally relevant to consumers, its underlying extensive and intensive data monitoring practices also lead to consumers' feelings of being watched and listened to by corporations, which is called "perceived surveillance." Given that consumers' online activity data is commonly collected and shared across different digital platforms in OBA, and there exists a limited understanding of how consumers respond to these cross-platform OBA messages, the present study aims to investigate how the OBA data-sharing extent (cross-platform vs. within-platform) influences consumers' perceived surveillance and subsequent advertising responses. Through an online experiment, this study found that consumers reported significantly higher levels of perceived surveillance when exposed to cross-platform OBA messages compared to within-platform ones. Furthermore, increased perceived surveillance was associated with higher levels of advertising avoidance and irritation, decreased attitudes toward the ad, the brand, and the publisher, as well as reduced click-through and purchase intentions.

Keywords: Online behavioral advertising, perceived surveillance, data sharing extent, psychological reactance, communication privacy management.

Table of Contents

Abstract	i
Table of Contents	iii
List of Tables	v
List of Figure	vi
Chapter 1: Introduction	1
Chapter 2: Literature Review	7
Personalized and Online Behavioral Advertising	7
The Extent of Data Sharing in OBA	10
Perceived Surveillance	12
Advertising Responses to Perceived Surveillance: Psychological Reactance	19
Chapter 3: Method	27
Experimental Design.....	27
Sample.....	28
Stimulus Development.....	31
Pretest.....	32
Main Study.....	35
Measures	36
Chapter 4: Results	41

Manipulation Check.....	41
Hypothesis Testing.....	42
Chapter 5: Discussion and Conclusion.....	49
General Discussion	49
Theoretical Implications	52
Practical Implications.....	54
Limitations and Future Directions	56
Conclusion	59
Bibliography.....	61
Appendix A. Stimulus Design	69
Appendix B. Survey Experiment Design	71

List of Tables

Table 1: Major characteristics of the sample in the main study	29
Table 2: Pretest sample characteristics	33
Table 3: Pretest results	35
Table 4: Descriptive and reliability statistics of measures.....	39
Table 5: Manipulation check results in the main study	42
Table 6: Mediation analyses results in the main study	47

List of Figure

Figure 1: Theoretical model and hypotheses..... 26

Chapter 1: Introduction

Ongoing technological advancements, particularly in big data, algorithms, and artificial intelligence, have given rise to digital data-driven advertising (Li, 2019). These technological innovations empower advertisers to predict consumers' recent interests and preferences based on their online activity data and deliver individually tailored ads that match their specific needs and interests (Boerman et al., 2017).

The advertising practices of utilizing consumers' online activity data, such as their search, viewing, and transaction histories, to deliver personalized digital ads is termed Online Behavioral Advertising (OBA, Federal Trade Commission, 2009a). What distinguishes OBA from other digital advertising categories is its data-driven base and personalization, i.e., tracking consumer online activities, often covertly, and delivering individually tailored ads based on the collected data (Boerman et al., 2017). As OBA targets consumers with a more personally relevant ad rather than using a single message to reach a mass audience, it boosts advertising effects, leading to more favorable advertising attitudes, brand attitudes, and higher purchase intentions than non-personalized digital ads (Van Reijmersdal et al., 2022).

What accompanies the personalization benefits are privacy issues regarding the use of consumer's personal information (Baek & Morimoto, 2012). Corporations' tracking and sharing of consumers' online activity data are perceived as harmful to privacy among consumers (Bulgurcu et al., 2010). Many consumers raise concerns about whether corporations will handle their data appropriately or even misuse their data (McDonald &

Cranor, 2001; Pavlou, 2005), and such concerns are found to be associated with consumers' less favorable advertising attitudes (Kim & Huh, 2017) and increased avoidance intention towards OBA messages (Ham, 2017).

Advancements in technologies empower corporations to monitor consumers' online behavior more extensively and intensively, thus enabling them to implement more intrusive OBA strategies (Federal Trade Commission, 2009b; Xu et al., 2012). The widespread use of mobile phones provides a much broader range of personally invasive online activity data than was previously possible with personal computers, as mobile phones are integrated into almost all aspects of modern life (Xu et al., 2012). Moreover, as data mining, i.e., automatic data analytics, continues to evolve, corporations can aggregate and process vast amounts of user data instantly, spanning from online activities and offline location traces, to gain more in-depth insights into consumers' daily life (Andrejevic & Gates, 2014; Larsson et al., 2021; Liu et al., 2023; Meta, 2024). Consequently, this continued tracking and processing of data generated in consumers' daily routines empowers advertisers to tailor personalized digital ads with unprecedented precision (Hannak et al., 2014; Stein, 2011). Consumers' exposure to OBA messages that involve corporations' continuous, pervasive, and intensive data monitoring can lead to their feelings of being surveilled (i.e., perceived surveillance) (Strycharz & Segijn, 2022). Specifically, perceived surveillance in this study is defined as "consumers' feelings of being watched, listened to, or that personal data are being recorded" (Strycharz & Segijn, 2022, p. 577).

Previous research on consumers' responses to OBA has predominantly focused on

cognitive evaluation, such as the trade-off between personalization benefits and privacy risks (Aguirre et al., 2016; Jai et al., 2013), or privacy concerns over corporations' potential misuse of personal information (Kim & Huh, 2017), as underlying mechanisms. However, there is a limited understanding of how consumers' responses to OBA are triggered through affective processing, i.e., how consumers' feelings triggered by the ad shape their related perceptions and responses (Burke & Edell, 1989). Addressing this research gap is important because when consumers perceive the collection, processing, and sharing practices of personal data as privacy infringements, their affective responses are also triggered (Bulgurcu et al., 2010). Moreover, previous research suggests that apart from consumers' cognitive evaluations, their affective feelings can jointly shape their advertising responses (Ham, 2017; Yi, 1990). Therefore, perceived surveillance, being more closely intertwined with consumers' affective processing of ads (Segijn et al., 2024), could add knowledge to this research gap.

Also, prior research on consumers' perceived surveillance in the OBA context mainly examined either within-platform OBA, where data collection and ad display occur within the same digital platform, or cross-platform OBA, where data collection and ad display occur across different digital platforms (Farman et al., 2020; Sifaoui, 2021). However, there is a lack of research comparing these two types and understanding how consumers react differently to them. Given that in OBA, consumers' data extends beyond a single platform and is exchanged across multiple platforms (Larsson et al., 2021; Liu et al., 2023), and considering that the extent of data sharing in OBA significantly influences consumers'

advertising responses – with more extensive data sharing leading to higher perceived risks, feelings of anxiety, and privacy concerns, which consequently decrease the advertising effects (Jai et al., 2013; Kim et al., 2019; Sutanto et al., 2013) – it would be insightful to investigate how consumers' perceived surveillance and advertising responses vary by exposure to OBA messages of different data-sharing extents.

To address the aforementioned research gaps, this study aims to investigate the effects of OBA data sharing extent (cross-platform vs. within-platform) on consumers' perceived surveillance and their subsequent advertising responses. Consumers' advertising responses in this study include advertising avoidance and irritation, their attitudes toward the ad (Aad), the brand (Ab), and the publisher (Ap), as well as click-through (CTI), and purchase intentions (PI). To predict the relationship among these variables, this study employs the Dataveillance Effects in Advertising Landscape (DEAL) Framework (Strycharz & Segijn, 2022), Communication Privacy Management Theory (CPM, Petronio, 2010) and Psychological Reactance Theory (PRT, Brehm, 1966).

The Dataveillance Effects in Advertising Landscape (DEAL) Framework proposes that consumers' exposure to the ads perceived as surveillance episodes is the most direct trigger of perceived surveillance (Strycharz & Segijn, 2022). Additionally, the context in which consumers encounter these ads – including their perceptions regarding how their data is collected, processed and shared after viewing the ad – can also influence this relationship (Strycharz & Segijn, 2022). Therefore, this study argues that differing extents of data sharing in OBA will lead to different levels of perceived surveillance. Moreover, the

distinction between cross-platform and within-platform data sharing lies in whether consumer data is shared externally with third parties (Liu et al., 2023). Therefore, Communication Privacy Management Theory (CPM), which outlines how individuals manage private information by establishing privacy rules on third-party disclosures (Petronio, 2010), should be applicable in explaining the difference in perceived surveillance after exposure to cross-platform versus within-platform OBA.

Furthermore, surveillance is perceived as an invasion of personal space (Solove, 2006), and individuals typically experience reactance when they perceive their private space is invaded (Brehm, 1966). Therefore, Psychological Reactance Theory (PRT, Brehm, 1966), which explains consumers' negative responses toward messages that are perceived as invasive to personal freedom and autonomy, is employed to explain how perceived surveillance relates to consumers' subsequent advertising responses.

The study contributes to the current literature in several ways. First, it investigates an important but underexplored factor – perceived surveillance – and sheds light on how consumers' affective feelings shape their responses toward OBA. Second, it addresses the research gap in consumer responses to cross-platform OBA by examining how consumers' perceived surveillance and subsequent advertising responses vary based on different data-sharing extents. Lastly, this study innovatively utilizes CPM, originally proposed in family relationship management (Petronio, 2010), in the advertising context, thereby expanding the scope of this theory's application.

In practice, this study also informs OBA practitioners, related policymakers, and regulators. For OBA practitioners, this knowledge can help them understand how consumers perceive and react to different levels of data-sharing in OBA, and design more transparent and privacy-respecting advertising strategies to mitigate the backlash responses. This knowledge can also inform regulators and policymakers by providing insights into the discrepancies between consumer expectations and industry practices, which can inform more effective policy-making processes.

Chapter 2: Literature Review

Personalized and Online Behavioral Advertising

Personalization in advertising has a longstanding history. Personalized advertising is defined as tailoring personalized advertising messages to individual consumers based on their personal information (Pavlou & Stewart, 2000). In its traditional form, personalized advertising relied heavily on consumers' demographic data including names, addresses, and phone numbers, as well as lifestyle interests and shopping preferences (Nowak & Phelps, 1995). Much of this data is collected through consumers' commercial engagement activities, such as subscriptions and purchases; corporations also conduct telephone inquiries or surveys to collect self-report data from target consumers (Nowak & Phelps, 1995). Based on the collected information, advertisers typically segment consumers and then deliver personalized ads directly through various channels such as mails, emails, phone calls, texts, and others (Baek & Morimoto, 2012).

As consumer data collection methods advance in the era of big data, and data processing and ad delivery are increasingly managed by algorithms and artificial intelligence, traditional personalized advertising practices have undergone significant transformation (Qin & Jiang, 2019). One notable development is the emergence of Online Behavioral Advertising (OBA).

Online Behavioral Advertising (OBA) is defined as delivering personalized digital ads to individual consumers based on their online activity data, such as search histories and viewing records (Boerman et al., 2017). Several key characteristics distinguish OBA from

traditional personalized advertising. First, unlike traditional personalized advertising which primarily utilizes demographics, offline transaction histories, and self-reported interests, OBA heavily relies on consumers' anonymous online activity data, including clicks, views, and online transactions (Federal Trade Commission, 2009b). Second, in contrast to traditional self-reporting which happens overtly between consumers and corporations, data collection in OBA often occurs covertly without consumers' informed consent (Boerman et al., 2017). This covert collection is typically facilitated by cookies — small text files inserted in web browsers or apps that enable data transmission to service providers (Federal Trade Commission, 2009b). Third, OBA leverages big data and artificial intelligence, which allows for collecting and processing data in huge volumes at unprecedented speeds (Kitchin & McArdle, 2016), and simultaneously creating the ads and delivering them to consumers (Andrejevic & Gates, 2014; Qin & Jiang, 2019). Here is a typical example of an OBA message: Last day, a consumer searched and browsed for flight tickets online. Later, as they browse their social media feeds, they encounter an ad for special discounts offered by an airline company. This ad is an OBA message because it is tailored specifically based on the consumer's previous online flight ticket search behaviors.

Consistent with findings in traditional personalized advertising (Sahni et al., 2018), multiple studies on OBA show that tailoring ads to match consumers' previous online behaviors significantly enhances advertising effects, leading to more favorable attitudes toward ads and brands, as well as increased purchase and click-through intentions (Aguirre et al., 2015; Bleier & Eisenbeiss, 2015; Van Reijmersdal et al., 2022). For example, Van

Reijmersdal et al. (2022) conducted a scenario-based online experiment, comparing consumer responses to personalized native ads (matching previous search content) with non-personalized native ads (not matching previous search content) on YouTube, a popular US online video sharing and social media platform; results show that personalized ads are perceived as more personally relevant than non-personalized ads, which consequently results in more positive ad attitudes, brand attitudes, and higher purchase intentions.

Moreover, research indicates that more personalized OBA yields more positive advertising effects (Bleier & Eisenbeiss, 2015; Van Reijmersdal et al., 2022). In a field quasi-experiment that happened in real online retailers, Bleier and Eisenbeiss (2015) found that personalized ads more closely tailored to consumers' interests (matching items placed in virtual shopping carts by consumers) result in higher click-through rates – overall clicks divided by overall ad impressions – than less personalized ones (matching items viewed by consumers). Aguirre et al. (2015) also found similar results in a scenario-based online experiment that banner ads tailored with higher precision to previous chatting histories (matching the exact product category) lead to higher click-through intentions compared to OBA with less precision (matching the similar product category) on Facebook, a US popular social media platform.

To enhance the precision of OBA, corporations continuously invest in more extensive and intensive data tracking to profile consumers in greater detail (Stein, 2011). One prevalent strategy is cross-platform data tracking, in which consumers' online activity data are tracked, exchanged, and aggregated across multiple platforms (Liu et al., 2023). The

discussion on how OBA messages vary based on the extent of data sharing, either cross-platform or within-platform, will be presented in the next section.

The Extent of Data Sharing in OBA

Consumers' online activity data is not only confined to one single platform but is tracked, exchanged, and shared across innumerable parties, such as platforms, ad agencies, data-mining companies, advertisers, and more (Christl, 2017; Stein, 2011). For instance, Jingdong, one of the representative online retailers in China, has announced a collaboration to exchange user data with Toutiao, one of China's largest online news platforms; this partnership implies that if a consumer searches for a product on Jingdong but does not complete the purchase, they might later encounter an ad for the same product in their algorithm-generated news feeds on Toutiao (AlltechAsia, 2016).

Facebook also integrates a substantial volume of consumer data from diverse sources into its advertising system. This includes data not only from Instagram and other Meta apps but also from apps and websites outside the Meta company; specifically, when consumers log into external websites or apps using their email addresses or phone numbers, Facebook's ad system can match this identifying information with Facebook profiles, and track consumers' online behaviors outside the Meta company into its datasets (Meta, 2024).

Indeed, cross-platform data tracking is ubiquitous online. Larsson et al. (2021) revealed that 77 out of 115 sampled websites utilize cross-platform data tracking and share consumers' web activity data with external third parties, and this practice is particularly

prevalent on media and online retailing websites. Enck et al. (2014) examined 30 Android applications and discovered that 15 of them transmit users' location data to external data-mining companies and advertisers, and two of them even transmit the device's phone number without obtaining users' informed consent. Furthermore, corporations form interconnected networks to exchange and trade huge datasets collected from consumers' online activities across different platforms or devices, either as raw data or segmented market profiles, to gain comprehensive insights into individual daily routines (Christl, 2017). Such continuous, pervasive, and intensive data tracking, along with the proliferation of networks for data trading and exchanging, significantly bolsters cross-platform OBA (Liu et al., 2023).

In this study, the extent of data sharing in OBA is conceptualized as consumers' awareness of the level at which their data is collected, processed, and shared. As this study focuses on the impact of cross-platform data tracking in OBA on consumers' perceived surveillance and advertising responses, this study categorizes the extent of OBA data sharing primarily by whether the data is perceived to be tracked within the platform where the ad displays or is collected externally from third parties. This differentiation results in two main categories of OBA messages to be examined, i.e., cross-platform and within-platform.

Cross-platform OBA refers to delivering personalized ads based on consumer data collected from sources outside the specific digital platform (e.g., the specific website or mobile application) where the ad is displayed (Kim et al., 2019), while within-platform

OBA refers to displaying personalized ads based on consumer data collected within the digital platform where the ad appears. To exemplify a cross-platform versus within-platform OBA message: Suppose a consumer recently searched for “flight tickets” on TikTok; A few hours later, while scrolling through Facebook, they encounter a banner ad promoting flight tickets. This scenario demonstrates exposure to cross-platform OBA as the product searches and ad exposure happen across two different platforms. If another consumer conducts the same "flight tickets" search on TikTok and then sees the same ad within the TikTok platform, this represents within-platform OBA as the product searches and ad exposure happen within the same platform.

Research has found that consumers respond differently to OBA messages based on whether the utilized data originates from within or outside the ad-displaying platform (Jai et al., 2013; Sutanto et al., 2013), highlighting that at the core of the extent of OBA data sharing is whether consumers’ online activity data is disclosed to third parties. The next section will focus on consumers’ varying perceptions of being under surveillance after exposure to OBA messages based on different extents of data sharing, applying the Dataveillance Effects in Advertising Landscape (DEAL) Framework (Strycharz & Segijn, 2022) and the Communication Privacy Management Theory (Petronio, 2010).

Perceived Surveillance

Surveillance is defined as “the watching, listening to, or recording of an individual’s activities” (Solove, 2006, p. 490). Individuals’ perceptions of being under surveillance,

whether driven by concrete evidence or related beliefs, can lead to uncomfortable feelings and behavioral changes (Solove, 2006). This phenomenon also applies to the context of OBA. The continuous, pervasive, and intensive collection, processing, and sharing of consumer data by corporations also represents a form of surveillance (Andrejevic & Gates, 2014; Büchi et al., 2022). Consumers' awareness of data surveillance in advertising can result in feelings of “being watched or listened to, or that personal data are recorded”, which is termed perceived surveillance (Strycharz & Segijn, 2022, p. 577).

Many factors contribute to consumers' perceived surveillance. According to the Dataveillance Effects in the Advertising Landscape (DEAL) Framework, consumers' exposure to the ads perceived as surveillance episodes is the most direct trigger of surveillance perceptions (Strycharz & Segijn, 2022). In other words, when consumers encounter an ad that is perceived as using personal data for personalization (i.e., an instance of surveillance), this exposure could make consumers aware that their data is being tracked and subsequently perceive they are being surveilled (Strycharz & Segijn, 2022).

Multiple studies have investigated consumers' perceived surveillance in the advertising context. By conducting in-depth interviews with undergraduate students, Phelan et al. (2016) found that participants who identify data tracking activities on websites report feelings of being watched or followed by someone, along with unease, anxiety, and fear. Frick et al. (2021) observed in an online survey that consumers worry about being listened to by smart devices and targeted with personalized digital ads based on their conversation content. Farman et al. (2020) conducted an online experiment and found that personalized

ads tailored to consumers' website viewing histories lead to higher perceived surveillance compared to non-personalized ads. These studies empirically validate the DEAL framework by showing that consumers are likely to associate personalized digital ads with corporations' data surveillance activities, and their awareness of these surveillance activities can evoke feelings of being surveilled (Strycharz & Segijn, 2022). Therefore, this study argues that OBA, as one type of personalized advertising that utilizes personal data, could also lead to consumers' perceived surveillance.

Additionally, the DEAL framework proposes that the context in which consumers encounter the ads, including their perceptions regarding how their data is collected, processed, and shared underlying the ad, can also play a role in shaping consumers' surveillance perceptions (Strycharz & Segijn, 2022). Therefore, this study argues that consumers' perceived surveillance may significantly differ by the extent of data sharing in OBA, and this difference can be further explained by the theory of Communication Privacy Management (CPM, Petronio, 2010).

CPM proposes that (1) individuals consider themselves as owners of their private information and perceive it as co-owned when shared with recipients; (2) they establish privacy boundaries, i.e., a set of privacy rules that control third-party access to shared information, between themselves and recipients; (3) The privacy rules include three aspects: who else can access the information (i.e., boundary linkage), how much information a third party can know (i.e., boundary permeability), and how much control the recipient has over the information (i.e., boundary ownership); (4) when these privacy rules

are violated by the recipient, the boundary turbulence happens, leading to individuals' negative cognitions and affections (CPM, Petronio, 2010).

CPM was originally proposed within family contexts in which individuals set up privacy rules with family members to control external family members' access to their private information (Petronio, 2010). CPM has also been extended to online environments in studying consumers' privacy management behaviors on websites (Metzger, 2007; Sannon et al., 2020). For instance, Metzger (2007) conducted an online experiment and found that consumers disclose different levels of private information depending on the privacy policies of online retailing websites; specifically, consumers disclose more sensitive information to websites that implement stricter privacy policies, whereas they withhold such information from websites with weaker privacy policies. Sannon et al. (2020) found through an online experiment that consumers' attitudes turn negative when they recognize that websites unexpectedly share their personal information with external advertisers. These findings suggest that consumers adjust their disclosure of personal information based on the agreed-upon privacy policies communicated by websites, and when these rules are perceived to be violated, it results in negative evaluations from consumers.

Moreover, as individuals unconsciously apply the same social rules and norms to non-human computer systems as they do with human partners (Nass et al., 1994), this study argues that when consumers disclose their private information (e.g., online activity data) with computer systems (e.g., websites, mobile applications), their privacy management with these digital platforms mirrors their privacy management with family members.

Therefore, this study argues that CPM is applicable in the OBA context, in which consumers consider the digital platforms that collect their online activity data as both the recipients and co-owners of their privacy, perceiving specific privacy rules to control third-party access to shared private information; when the perceived privacy rules are breached by digital platforms, boundary turbulence happens and consumers respond with negative cognitions and affections.

Consumers perceive different privacy rules regarding cross-platform and within-platform OBA. According to a US nationally representative survey, over 80 percent of respondents are aware that websites track their online activities; however, most are unaware that their data can be exchanged and sold to external websites or companies (Turow et al., 2008). Similar findings are echoed in other studies. Marreiros et al. (2015) found through a series of focus groups that many website users remain unaware that cookies enable cross-platform tracking of their website browsing data, and unaware that this data is shared externally with third parties. Larsson et al. (2021) also draw similar conclusions through focus groups that most consumers express surprise upon learning that their data is processed and shared with third parties. Another nationally representative survey revealed that most Americans even mistakenly believe that current regulations and laws forbid consumer data trading and sharing across different platforms (Turow et al., 2009). These studies highlight consumers perceive varying privacy rules toward cross-platform data tracking compared to within-platform tracking. Specifically, these studies suggest that consumers perceive their data to be collected and processed within the platform but do not

perceive it to be shared externally with third parties.

As consumers generally expect their online activity data to remain inaccessible to third parties, such as external websites or applications (McDonald & Cranor, 2010), their awareness of external data sharing in cross-platform OBA breaches perceived boundary linkage and boundary permeability. This is because consumers' perceived privacy rules that external parties have no access to and know nothing about their online activities are violated. Also, the discrepancy between consumers' perceived control that the recipient should have over their personal information, where they believe digital platforms should only engage in internal data processing (McDonald & Cranor, 2010), and the actual control exerted by these platforms, which involves both internal and external processing (Christl, 2017), leads to violations of boundary ownership. Therefore, this study argues that consumers' perceived privacy boundaries are likely to be violated more in cross-platform OBA compared to within-platform OBA, leading to more negative cognitions and affections.

Multiple empirical research has highlighted consumers' more negative cognitions and affections in response to cross-platform OBA than within-platform OBA. Jai et al. (2013) found in an online experiment that consumers perceive higher level of risks when they become aware that OBA on retailing websites involves external data sharing with third parties compared to situations where data is internally shared. Similarly, Kim et al. (2019) discovered that website users consider external data sharing as unacceptable and raise significantly higher privacy concerns than internal sharing. Sutanto et al. (2013) reported

similar findings among mobile application users, suggesting that external data sharing leads to higher levels of privacy concerns and anxiety compared to internal data processing.

While existing research has not directly examined how consumers' perceived surveillance varies by the extent of OBA data sharing, this study argues that cross-platform will lead to higher perceived surveillance than within-platform OBA based on the following theoretical and empirical justifications. Theoretically, consumers' perceived privacy boundaries are argued to be violated more in cross-platform than within-platform OBA, leading to more negative and intense affective feelings. Consequently, consumers' feelings of being surveilled are argued to be more heightened in cross-platform OBA as the perceived privacy boundaries are violated more. Empirically, studies have shown that cross-platform OBA leads to higher privacy concerns and anxiety compared to within-platform OBA (Jai et al., 2013; Sutanto et al., 2013). As consumers' perceived surveillance is intertwined with their privacy concerns and anxiety in response to OBA (Phelan et al., 2016; Xu et al., 2012), it is reasonable to infer that consumers' perceived surveillance is positively associated with privacy concerns and anxiety, and will be higher in cross-platform compared to within-platform OBA along with their higher privacy concerns and anxiety levels.

In sum, this study hypothesizes as follows:

H1: Consumers will perceive a higher level of surveillance following exposure to cross-platform compared to within-platform OBA messages.

Advertising Responses to Perceived Surveillance: Psychological Reactance

Surveillance is considered a threat to individuals' freedom or autonomy because it coerces individuals to expose privacy to others and therefore leads to behavioral changes (Solove, 2006). Data surveillance, even when it is merely perceived or aware by consumers, can also pose threats to consumers' freedom and autonomy, resulting in changes in both attitudes and behaviors (Büchi et al., 2022; Farman et al., 2020). Consumers' advertising responses to Online Behavioral Advertising (OBA) after experiencing perceived surveillance can be explained by the theory of Psychological Reactance (PRT, Brehm, 1966).

According to Psychological Reactance Theory (PRT, Brehm, 1966), when individuals perceive a message as threatening their freedom or autonomy, they are likely to experience psychological reactance which is characterized by negative cognitions, emotions, and resistant behaviors. To explain consumers' advertising responses to OBA after perceived surveillance through PRT, this study should first explicate how consumers' perceived freedom or autonomy is jeopardized by perceived surveillance.

Freedom in PRT is originally defined as "the perceived ability to make choices and act following individuals' desires and beliefs without external interference or coercion" (Brehm & Brehm, 2013, p.5). In other words, when individuals perceive themselves as having freedom or autonomy in a specific domain, they believe they can act ultimately based on their desires, and any external interference that impedes the exercise of this perceived freedom is considered a threat (Brehm & Brehm, 2013). In the context of privacy

management, individuals affirm their ownership of private information and claim ultimate control over its access to others (Petronio, 2010). In the OBA context, the majority of consumers maintain the belief that they should have complete control over the personal information being tracked by websites, and they expect such online privacy to be legally protected (Hoffman et al., 1999). Therefore, in this study, the concept of freedom is defined as consumers' perceived control over their private information collected, processed, and shared by online digital platforms.

Surveillance is viewed as an intrusion into individuals' private space (Solove, 2006), and individuals tend to experience psychological reactance when they perceive their private space is invaded (Brehm, 1966). This situation parallels privacy boundary turbulence in the theory of Communication Privacy Management, i.e., when individuals perceive their private information is not properly managed by the recipients by recognizing that their privacy is accessed by unexpected third parties, they are likely to feel invaded (Petronio, 2010). In the OBA context, higher levels of perceived surveillance are shown to be significantly associated with greater perceived threats to individuals' ultimate control over personal information, leading to increased psychological reactance (Farman et al., 2020). Therefore, this study argues that surveillance threatens consumers' perceived control over private information in the OBA context, and when consumers perceive higher levels of surveillance, they are expected to experience more psychological reactance characterized by more negative cognitions, emotions, and resistant behaviors. The following subsections will delve into consumers' advertising responses to perceived surveillance, including

advertising avoidance, advertising irritation, Ad attitudes (Aad), brand attitudes (Ab), publisher attitudes (Ap), purchase intentions (PI), and click-through intentions (CTI).

Advertising Avoidance and Irritation

When consumers' psychological reactance is triggered, they often experience a loss of freedom, which prompts them to resist the message or take action to mitigate perceived threats, and this response is accompanied by negative emotions (Brehm, 1966). In the advertising context, these responses are typically manifested in two ways, i.e., behavior and emotion; specifically, advertising avoidance represents the potential behavioral outcome while advertising irritation reflects the possible emotional outcome (Edwards et al., 2002).

Advertising avoidance is defined as "all actions by media users that differentially reduce their exposure to ad content" (Speck & Elliott, 1997, p.61). In print and television advertising, ad avoidance primarily encompasses three strategies: cognitive strategy, i.e., not paying attention or devoting cognitive resources (e.g., ignoring the ad); behavioral strategy, i.e., physically distancing oneself from the ad (e.g., leaving the TV room); and mechanical strategy, i.e., using tools or devices to avoid ads (e.g., switching channels) (Edwards et al., 2002). When applied to the Online Behavioral Advertising (OBA) context, these strategies translate as follows: cognitive strategy may involve ignoring OBA messages, behavioral strategy may involve scrolling past webpages with OBA, and mechanical strategy may include adjusting web settings to block OBA (Ham, 2017). Given that perceived surveillance can trigger consumers' psychological reactance in the OBA context (Farman et al., 2020), and the significant relationship found between consumers'

psychological reactance and ad avoidance (Ham, 2017), this study argues that consumers' perceived surveillance will significantly influence their advertising avoidance.

Advertising irritation is defined as consumers' feelings of "displeasure and momentary impatience" provoked by the ad (Aaker & Bruzzone, 1985, p.48). Irritation triggers a stronger negative sentiment than "dislike" because it also encompasses feelings of annoyance and offense (Aaker & Bruzzone, 1985). Consumers' feelings of irritation can be triggered by both the ad content and how it is delivered to consumers (Aaker & Bruzzone, 1985; Morimoto & Chang, 2009). For example, Aaker and Bruzzone (1985) suggest that ads depicting intense physical discomfort or extremely unpleasant situations are more likely to trigger irritation. Morimoto and Chang (2009) found that when consumers perceive the delivery method of ads as intrusive, they are more likely to respond with irritation. In the context of personalized advertising, when consumers perceive ads as threatening their perceived control over privacy, they are likely to experience irritation (Baek and Morimoto, 2012). Given that surveillance is perceived as a threat to consumers' perceived control over private information (Farman et al., 2020), and such loss of control can trigger advertising irritation (Baek and Morimoto, 2012), this study argues that consumers will experience advertising irritation when they perceive surveillance following exposure to OBA.

The greater the magnitude of psychological reactance, the more strongly consumers are likely to resist the source of persuasion and respond with more negative emotions (Dillard & Shen, 2005; Youn & Kim, 2019). Since the degree of perceived surveillance is positively associated with the extent of reactance triggered by OBA messages – with greater

surveillance perceptions resulting in stronger psychological reactance (Farman et al., 2020) – and higher levels of psychological reactance leading to stronger tendencies of advertising avoidance and irritation (Baek and Morimoto, 2012; Ham, 2017), this study anticipates a similarly positive relationship between perceived surveillance and consumers' advertising avoidance and irritation after viewing the OBA messages. Therefore, this study hypothesizes as follows:

H2a: The higher the level of perceived surveillance, the greater the reported advertising avoidance from consumers.

H2b: The higher the level of perceived surveillance, the greater the reported advertising irritation from consumers.

Attitudes and behavioral intentions

Apart from triggering consumers' resistance and negative emotions, psychological reactance is found to significantly diminish the advertising effects (Dillard & Shen, 2005). Most advertising research typically evaluates the advertising effects by examining consumers' self-reported attitudinal responses and behavioral intentions following exposure to ads (e.g., Ma & Li, 2024; Schouten et al., 2020; Van Reijmersdal et al., 2022). This study similarly examines the advertising effects of OBA through consumers' attitudes, including advertising attitudes (Aad), brand attitudes (Ab), and publisher attitudes (Ap), as well as behavioral intentions including purchase intentions (PI) and click-through intentions (CTI).

There are two primary players involved in the realm of OBA practices: advertisers and

publishers (Chen & Stallaert, 2014). Publishers, which refer to the digital platforms such as websites or applications where the ad is displayed, play a pivotal role in determining which ads are shown to specific consumers (Chen & Stallaert, 2014). Advertisers engage in competitive auctions to secure advertising space provided by publishers which enables them to present their ads to consumers (Chen & Stallaert, 2014). Therefore, apart from advertising attitudes, this study will also examine consumer attitudes toward the advertised brand and publishers. Specifically, advertising attitudes (Aad) represent consumers' positive or negative attitudes upon viewing the ad (Lee et al., 2017). Brand attitudes (Ab) represent consumers' favorable or unfavorable attitudes toward the advertised brand (Mitchell & Olson, 1981). Publisher attitudes (Ap) represent consumers' positive or negative opinions about the digital platform where the ad is displayed (Ghanbarpour et al., 2022).

Prior research in OBA has found that consumers' evaluation of the ad is significantly and positively associated with their attitudes toward the brand featured in the ad, as well as their attitudes toward the digital platform that publishes the ad (Ghanbarpour et al., 2022). Therefore, given that increased perceived surveillance leads to more negative advertising attitudes due to greater psychological reactance after exposure to OBA messages (Farman et al., 2020) and the established positive effects of consumers' advertising attitudes on their attitudes toward the brand and publisher (Ghanbarpour et al., 2022), this study expects that greater perceived surveillance will lead to more negative advertising attitudes (Aad), brand attitudes (Ab), and publisher attitudes (Ap).

In sum, this study hypothesizes as follows:

H3a: The higher the level of perceived surveillance, the less positive the reported advertising attitudes (Aad) from consumers.

H3b: The higher the level of perceived surveillance, the less positive the reported brand attitudes (Ab) from consumers.

H3c: The higher the level of perceived surveillance, the less positive the reported publisher attitudes (Ap) from consumers.

In terms of behavioral intentions, click-through intentions represent the extent to which consumers are willing to click on the OBA message (White et al., 2008), and purchase intentions refer to a consumer's expressed likelihood or intention to buy the advertised brand or product in the future (Warshaw & Davis, 1985). Given that greater perceived surveillance leads to increased reactance (Farman et al., 2020), and greater reactance is associated with decreased intentions to click through OBA messages (White et al., 2008), this study anticipates that higher perceived surveillance will result in lower click-through intentions from consumers. Additionally, as the level of perceived surveillance negatively relates to consumers' advertising attitudes (Farman et al., 2020), and consumers' advertising attitudes are positively associated with their purchase intentions (Li & Ma, 2023; Xu et al., 2009), this study expects that greater perceived surveillance will relate to lower purchase intentions due to the concurrent decrease in advertising attitudes. In sum, this study hypothesizes as follows:

H4a: The higher the level of perceived surveillance, the lower the reported click-

through intentions (CTI) from consumers.

H4b: The higher the level of perceived surveillance, the lower the reported purchase intentions (PI) from consumers.

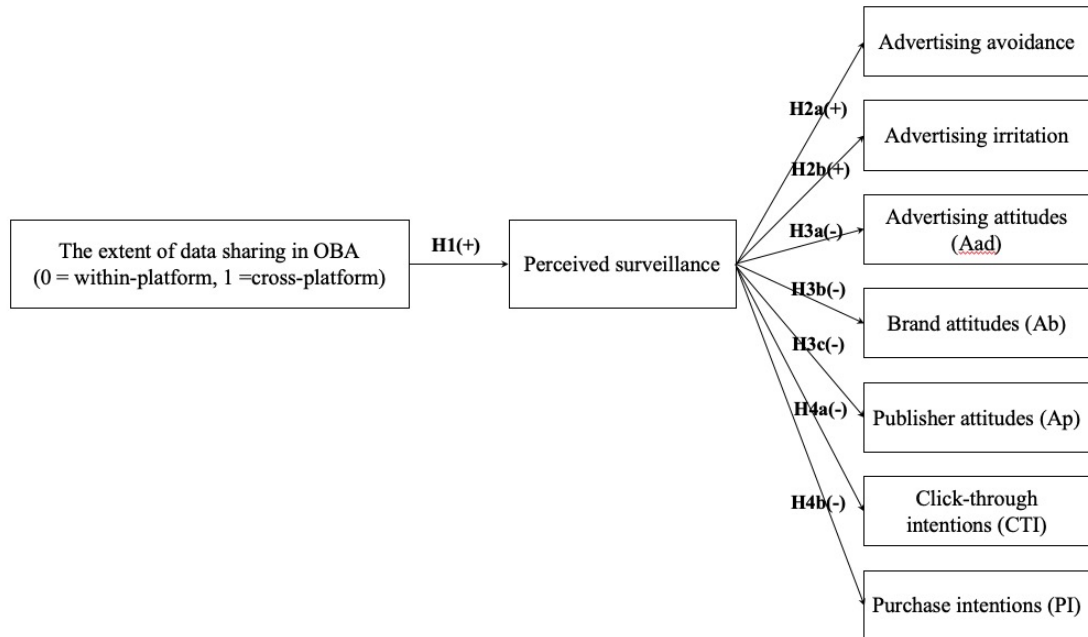


Figure 1: Theoretical model and hypotheses

Chapter 3: Method

Experimental Design

To test the proposed theoretical framework (See Figure 1), the study utilizes a one-factor (OBA data-sharing extent), two-condition (cross-platform vs. within-platform data sharing) between-subjects, and scenario-based online experiment. There are several reasons for choosing the online experimental method. First, conducting experiments allows for manipulating the investigated independent variable and measuring its effects on the examined outcomes (Spencer et al., 2005), which is aligned with the study purpose of testing the effects of OBA data-sharing extent on consumers' surveillance perceptions and subsequent advertising responses. Second, the experimental method leads to stronger internal validity than other social science research methods because it allows for respondents' random assignment to different treatments, and controlling the experimental conditions (Schutt, 2018). Third, experimenting online can overcome location restrictions and reach a larger and more diverse participant pool, which enhances the sample representativeness and thereby increases the generalizability of the study results (Lefever et al., 2007).

The reason for choosing a between-subjects experimental design (i.e., one condition is assigned to each respondent) instead of a within-subjects design (i.e., two conditions are both assigned to each respondent) is that the respondents' exposure to one condition could potentially influence their responses to another, and the between-subject approach can

avoid such carryover effects because each respondent is exposed to only one condition (Charness et al., 2012)

Specifically, this experiment utilizes a scenario-based approach in which participants respond to survey questions based on hypothetical situations outlined in scenarios (Gupta et al., 2017). This scenario-based approach has advantages in easily operationalizing manipulations and controlling experimental conditions (Fisher & Dubé, 2005; Kim & Jang, 2014), and therefore enhances the internal validity of the study. The scenario-based experiment is commonly employed in advertising research and OBA context (e.g., Jai et al., 2013; Ghanbarpour et al., 2022). For example, Jai et al. (2013) examines how consumers evaluate OBA involving internal versus external data sharing differently in online retailing websites by conducting an online scenario-based experiment, yielding effective manipulations of different data-sharing extents. Therefore, this study uses the scenario-based approach regarding its advantages in enhanced internal validity, widespread use, successful replication in the OBA context, feasibility, and fit for the study.

Sample

The study recruited 282 respondents through Prolific (<https://www.prolific.com>), an online survey recruitment platform. The sample exclusion applied four pre-established selection criteria: participants had to be aged 18 or older, live in the United States, finish the questionnaire, and correctly answer 1 attention check question. After screening through these pre-established selection criteria, 3 respondents who did not finish the questionnaire

and failed to correctly answer the attention-check question were excluded, and 279 eligible responses were further proceeded with data analysis.

Out of 279 eligible respondents, 44% identify as men, while 55% identify as women. This gender distribution indicates a relatively balanced gender distribution within the sample. In terms of age, the majority fall within the 25-34 years old category (39.1%), followed by the 35-44 years old category (26.5%), with smaller proportions in the 18-24 years old (14.0%) and 45-54 years old (9.7%) categories. Additionally, there are respondents aged 55-64 years old (7.5%) and those aged 65 and above (3.2%). This diverse age range ensures capturing responses from consumers across all different ages. The major ethnic identity is White (69.2%), followed by Asian (11.8%) and Black or African American (10.6%). In terms of education, over half of the respondents (59.5%) have a bachelor's degree or above, while the remaining respondents have at least a high school education or above, indicating a medium to high overall education level within the sample.

Overall, the sample is gender-balanced, predominantly white, skewed toward middle-aged, and medium-well educated. See Table 1 for more details of major sample characteristics.

Table 1: Major characteristics of the sample in the main study

Characteristics	Percentage	Count
<i>Gender</i>		
Male	44%	122
Female	55%	153

Non-binary/third gender	1%	3
Prefer not to say	0%	5
<i>Age</i>		
18-24 years old	14.0%	39
25-34 years old	39.1%	109
35-44 years old	26.5%	74
45-54 years old	9.7%	27
55-64 years old	7.5%	21
65+ years old	3.2%	9
<i>Ethnic group</i>		
White or Caucasian	69.2%	193
Black or African American	10.6%	30
American Indian/Native American or Alaska Native	1.8%	5
Asian	11.8%	33
<i>Education</i>		
High school diploma or GED	10.0%	28
College with no degree	20.4%	57
Associates or technical degree	9.7%	27
Bachelor's degree	41.2%	115
Graduate or above	18.3%	51

Stimulus Development

The stimulus (See Appendix A) consists of two parts: a text describing a specific scenario and a static image of a TikTok in-feed native ad. In the scenarios of cross-platform conditions, participants were asked to imagine searching for a particular product (i.e., a backpack of a fictitious brand) on Amazon three days ago. Then, they were exposed to a simulated ad on TikTok. Contrastingly, in the within-platform condition, participants engaged in scenarios where they conducted product searches and encountered ads within the same platform (i.e., TikTok). The static image of the TikTok in-feed native ad remains the same across both conditions to ensure that the only factor being changed is the extent of OBA data sharing. This approach aims to control the conditions and achieve the desired manipulation of the examined factor, thus enhancing the internal validity of the study (Geuens & De Pelsmacker, 2017)

Amazon and TikTok are selected as the two platforms (publishers) for the stimuli design because the combination of online retailing platforms and social media platforms represents a widely observed practice in cross-platform OBA (Alltech Asia, 2016; Liu et al., 2023). Additionally, Amazon, the largest online retailer in the US (Statista, 2023), and TikTok, one of the major players in cross-platform OBA practices (TikTok, 2022), both have a wide user base in the US.

The rationale for selecting in-feed native ads is grounded in their popularity among advertisers. Native ad spending in the US has consistently accounted for more than half of

the total ad spending on social media, surpassing other advertising categories (King, 2023).

The rationale for using a fictitious brand in the stimuli is to reduce confounding effects brought by respondents' previous exposure to real brands, thereby enhancing the study's internal validity (Geuens & De Pelsmacker, 2017).

Pretest

To assess whether the stimuli effectively manipulate participants' awareness of within vs. cross-platform data sharing in OBA, a pretest involving an undergraduate student sample was conducted. In the pretest, participants were first instructed to read an informed consent online and click the "agree" button to proceed with the study. Then, they were randomly assigned to one of the two conditions, being exposed to either cross-platform or within-platform scenarios and simulated ads. After exposure to the stimuli, participants were directed to complete a questionnaire measuring their awareness of the data-sharing extent. Lastly, respondents reported their demographic information. Each student participant was compensated with extra course credits for their participation.

Pretest Sample Characteristics

115 participants were recruited online through Hubbard School of Journalism and Mass Communication Research Participation System at the University of Minnesota Twin Cities. Eligible participants should meet the following criteria: (1) Above 18 years old. (2) Reside in the US. (3) Finish at least manipulation check questions. After screening through the aforementioned criteria, 9 responses were excluded, and 106 responses were proceeded

with further analysis.

The pretest sample mainly consists of female students (77.4%) while males comprise 15.1%. Most participants fall within the 18-24 age group (95.3%). The major ethnic identity is White (65.1%), followed by Asian (22.6%) and African American (7.5%). Overall, the pretest sample is predominantly white, female, young-aged, and well-educated. See Table 2 for more details of respondents' characteristics in the pretest.

Table 2: Pretest sample characteristics

Characteristics	Percentage	Count
<i>Gender</i>		
Male	15.1%	16
Female	77.4%	82
Non-binary/third gender	5.7%	6
<i>Age</i>		
18-24 years old	95.3%	101
25-34 years old	1.9%	2
35-44 years old	1.9%	2
<i>Ethnic group</i>		
White or Caucasian	65.1%	69
Black or African American	7.5%	8
Asian	22.6%	24
American Indian/Native American or Alaska Native	2.8%	3

Pretest Results

For the pretest, participants were presented with the statements adapted from Jai et al. (2013), with the external-check item being "This ad is created using information about me collected from external sources of/outside TikTok" and the internal-check item being "This ad is created using information about me collected from internal sources of/inside TikTok." They were asked to rate their agreement with each statement on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

To assess the effectiveness of manipulation, Two separate Welch Two Sample t-tests (Keselman et al., 2004) were conducted to compare whether there are significant differences in means in both manipulation check items across two groups. As for the external-check item, the results revealed a significant difference in means between within-platform conditions and cross-platform conditions ($t = -3.71, df = 85.58, p < .001$), with the cross-platform condition having a significantly higher mean ($M = 5.91, SD = 1.42$) than the within-platform condition ($M = 4.69, SD = 1.89$). As for the internal-check item, the results also revealed a significant difference ($t = 6.93, df = 89.92, p < .001$), and the cross-platform condition had a significantly lower mean ($M = 4.29, SD = 1.82$) than the within-platform condition ($M = 6.21, SD = 0.97$). The results of the manipulation checks are listed in Table 3.

In sum, the pretest results showed that the internal-check item yielded significantly higher means in the within-platform condition, while the external-check item yielded significant higher means in the cross-platform condition, which reasonably indicates that

the manipulation of the independent variable (respondents' awareness of within-platform vs. cross-platform data sharing after exposure to OBA message) in the stimuli is effective.

Table 3: Pretest results

Item	Condition	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	95% <i>CI</i>
Internal check	Within	6.21	0.97	6.93	89.92	< .001	[1.37, 2.46]
	Cross	4.29	1.82				
External check	Within	4.69	1.89	-3.71	85.58	< .001	[-1.88, -0.57]
	Cross	5.91	1.42				

Main Study

The survey experimental design in the main study followed a structured procedure: (1) Informed consent: Participants were initially briefed on the study's background and acknowledged that participation is voluntary, confirming they are 18 years of age, currently living in the US, and can choose to terminate participation at any point. They should agree with the consent form before proceeding with the survey experiment. (2) Random assignment: Participants were randomly assigned to one of two conditions: either a cross-platform scenario and a simulated TikTok native ad or a within-platform scenario and the same simulated TikTok ad. (3) Post-stimulus measures: After exposure to the stimuli, participants were directed to answer the survey constructs measuring their perceived surveillance, and responses to the ad, including their attitudes toward the ad, the brand, the publisher, click-through intentions, purchase intentions, advertising avoidance, and

advertising irritation. The questions and statements in the questionnaire are randomized to reduce the confounding effects caused by the order in which they are presented (Stantcheva, 2023). (4) Manipulation check: Respondents were exposed to the stimulus for the second time and filled in the same manipulation check items used in the pretest adapted from Jai et al. (2013). Placing the manipulation check after the key variable measures aims to prevent any potential bias that the manipulation check may bring to the respondents (Geuens & De Pelsmacker, 2017). (5) Demographics report: Respondents provided demographic information including gender, age, identified ethnic group, and education level. They were also asked to report their usage of social media platforms and online retailers in the past year, as well as their prior attitudes toward the social media platform and online retailer used in the stimuli. (6) Debrief: After finishing the survey experiment, respondents were then debriefed about the real purpose of the study, i.e., investigating the influence of data sharing extent on consumer responses to online behavioral ads. (7) Monetary reward process: participants were then automatically directed to a page detailing the process for receiving monetary rewards following an hourly rate of \$12.85.

Measures

Perceived surveillance. Perceived surveillance was measured with four items rated on a 7-point Likert scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). Participants were asked to indicate to what extent they agreed with the items “This ad makes me feel the advertising company is watching my every move, checking up on me, looking over my

shoulder, and entering my private space” (Segijn et al., 2022, p.4). Originally designed to measure consumers’ surveillance perceptions in response to data-driven communication messages (Segijn et al., 2022), this scale proved relevant to the OBA context given that OBA is also one type of data-driven communication (Boerman et al., 2017). Additionally, previous research in personalized advertising has applied this scale and demonstrated high reliability with Cronbach's alpha exceeding .95 (Segijn et al., 2024; Sifaoui, 2021).

Advertising avoidance. Advertising avoidance was measured with five items rated on a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Participants indicated their level of agreement with the items: “I will ignore this ad on TikTok; I will not pay attention to this ad on TikTok; I will gloss over this kind of ad on TikTok; I will stay away from this ad; I will ask TikTok to block this ad if I could” (Ham, 2017; Baek & Morimoto 2012). Given that “advertising avoidance” is conceptualized as “all actions by media users that differentially reduce their exposure to ad content” (Speck & Elliott, 1997, p.61) and consists of three main dimensions: cognitive, behavioral, and mechanical (Edwards et al., 2002). These items were selected to align with the conceptualized dimensions of advertising avoidance, excluding irrelevant ones.

Advertising irritation. Advertising irritation was measured with five items, utilizing a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree): “I think the TikTok ad is negative/ irritating/ confusing/ messy/ deceptive”. These items were originally adapted from Baek & Morimoto (2012). Given the conceptualization of "advertising irritation" as consumers' negative emotions following exposure to the ad, items

emphasizing emotions and feelings were prioritized in the selection process to align with this conceptualized definition, while irrelevant ones were excluded.

Attitudes. Attitudes were measured by 7-point semantic differential scales with five items each. Advertising attitudes (Aad) were measured with items “I think the TikTok ad in the imagined scenario is bad - good, unpleasant - pleasant, unfavorable - favorable, unappealing – appealing, unlikable - likable”. Brand attitudes (Ab) were measured with items “The TikTok ad in the imagined scenario makes the brand [Piping Mount] bad - good, unpleasant - pleasant, unfavorable - favorable, unappealing – appealing, unlikable - likable”. Publisher attitudes (Ap) were measured with items “The TikTok ad in the imagined scenario makes the social media platform [TikTok] bad - good, unpleasant - pleasant, unfavorable - favorable, unappealing – appealing, unlikable - likable”. Originally adapted from Spears & Singh (2004), these items were widely used in assessing consumers’ attitudinal responses toward social media ads and consistently demonstrated high reliability with Cronbach's alpha exceeding .90 in previous research (e.g., Ma & Li, 2024; Schouten et al., 2020). Thus, these items were selected for their consistently high reliability across a wide range of advertising research contexts.

Click-through intentions (CTI). Click-through intentions were measured using one single item “I would like to click on the ad to get further information,” utilizing a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). This item was directly borrowed from a previous OBA study (Aguirre et al., 2015, p. 40), and was selected regarding its strong fit for measuring consumers’ willingness to click on the OBA message,

which aligns well with the conceptualization of click-through intentions and the context of this study.

Purchase intentions (PI). Purchase intentions were measured using four items “I would like to buy [Piping Mount]'s backpack; I intend to buy [Piping Mount]'s backpack; I'm interested in purchasing [Piping Mount]'s backpack; I would probably buy [Piping Mount]'s backpack.” Participants rated their agreement on a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). These items were borrowed from Spears & Singh (2004) and also demonstrated high reliability in the OBA context with Cronbach's alpha exceeding .95 (Van Reijmersdal et al., 2022). The items were chosen for their fit within the study context and their demonstrated reliability when applied to the OBA context.

According to the descriptive and reliability statistics of measures (See Table 4), all multiple-item measures demonstrated high reliability. Measures of advertising attitudes, brand attitudes, publisher attitudes, and purchase intentions yielded Cronbach's alpha above .95. Measures of perceived surveillance and advertising avoidance yielded Cronbach's alpha above .90. Measures of advertising irritation yielded Cronbach's alpha above .85. Therefore, the data collected using these measures can be considered reliable for further analysis and interpretation (Schutt, 2018).

Table 4: Descriptive and reliability statistics of measures

Measures	M (SD)	Cronbach's alpha
Perceived surveillance	4.4 (1.6)	.92

Advertising avoidance	4.5 (1.5)	.91
Advertising irritation	3.4 (1.4)	.86
Advertising attitudes	3.8 (1.5)	.97
Brand attitudes	3.9 (1.4)	.97
Publisher attitudes	3.5 (1.5)	.98
Click-through intentions	3.1 (1.8)	N/A (Single item)
Purchase intentions	3.2 (1.5)	.97

Chapter 4: Results

Manipulation Check

For the manipulation check, participants were presented with the same statements in the pretest adapted from Jai et al. (2013), with the external-check item being "This ad is created using information about me collected from external sources of/outside TikTok" and the internal-check item being "This ad is created using information about me collected from internal sources of/inside TikTok." They were asked to rate their agreement with each statement on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Two separate Welch Two Sample t-tests (Keselman et al., 2004) were conducted to compare whether there is a significant difference in means in the checked items between within-platform and cross-platform conditions. As for the external-check item, the results revealed a significant difference in means across two conditions ($t = -7.84$, $df = 236.37$, $p < .001$), with the cross-platform condition having a significantly higher mean ($M = 5.99$, $SD = 1.18$) than the within-platform condition ($M = 4.55$, $SD = 1.83$). As for the internal-check item, the results also revealed a significant difference ($t = 5.56$, $df = 252.3$, $p < .001$), and the cross-platform condition had a significantly lower mean ($M = 4.61$, $SD = 1.87$) than the within-platform condition ($M = 5.70$, $SD = 1.34$). The results of the manipulation checks are listed in Table 5.

In sum, the manipulation check results showed that the internal-check item yielded higher means in the within-platform condition, while the external-check item yielded higher means in the cross-platform condition, which reasonably indicates that the manipulation of

the independent variable (respondents' awareness of within-platform vs. cross-platform data sharing after exposure to OBA message) in the stimuli is effective.

Table 5: Manipulation check results in the main study

Item	Condition	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	95% <i>CI</i>
Internal check	Within	5.70	1.34	5.56	252.3	< .001	[0.70, 1.47]
	Cross	4.61	1.87				
External check	Within	4.55	1.83	-7.84	236.37	< .001	[-1.81, -1.08]
	Cross	5.99	1.18				

Hypothesis Testing

H1: OBA data-sharing extent and perceived surveillance.

H1 predicted that respondents exposed to cross-platform OBA conditions would perceive higher levels of surveillance compared to those exposed to within-platform conditions. To test the direct effects of data-sharing extent on perceived surveillance, a simple regression analysis was conducted in R Statistical Software (R Core Team, 2023). The OBA data-sharing extent was entered as a dummy-coded predictor, with 0 denoting the within-platform condition and 1 denoting the cross-platform condition. Perceived surveillance, measured on a 7-point Likert scale, was entered as the continuous outcome variable.

The results revealed a statistically significant positive relationship between OBA data-sharing extent ($b = 0.43$, $p = .023$) and perceived surveillance ($R^2 = 0.02$, $F [1, 277] = 5.21$,

$p = .023$). Specifically, respondents reported an average increase of 0.43 points in perceived surveillance when exposed to cross-platform conditions compared to within-platform conditions. Therefore, **H1 was supported**.

H2: Effects of perceived surveillance on (a) advertising avoidance and (b) advertising irritation.

To test H2a-b, two separate simple mediation analyses were conducted using PROCESS Macro Model 4 with 5000 bootstraps in R Statistical Software (Hayes, 2017). There are several reasons for using PROCESS Macro Model 4 for the mediation analyses in this study: First, Model 4 could check both direct effects and indirect effects and report their significant levels, and thus present a comprehensive understanding of the mediation process; Second, Model 4 uses bootstrapping methods to calculate the confidence interval, and therefore addresses the potential issues with sample size and normality, and increases the reliability of the results (Hayes, 2017).

In the two separate mediation analyses, the OBA data-sharing extent was entered as a dummy-coded independent variable (0 = within-platform condition, 1 = cross-platform condition). Perceived surveillance was entered as the continuous mediator. Advertising avoidance and advertising irritation were entered as continuous dependent variables separately.

H2a predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and advertising avoidance. The direct effect of OBA data-sharing extent on advertising avoidance was not statistically significant (direct effect = -0.08 , $SE =$

0.17, $p = .647$, 95% $CI [-0.41, 0.26]$). However, the indirect effect through perceived surveillance was positive and significant (indirect effect = 0.14, $SE = 0.07$, 95% $CI [0.02, 0.29]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43$, $p = .023$), which subsequently led to an increase in advertising avoidance ($b = 0.33$, $p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and advertising avoidance. **H2a was supported.**

H2b predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and advertising irritation. The direct effect of OBA data-sharing extent on advertising irritation was not statistically significant (direct effect = -0.00 , $SE = 0.14$, $p = .994$, 95% $CI [-0.27, 0.27]$). However, the indirect effect through perceived surveillance was positive and significant (indirect effect = 0.20, $SE = 0.09$, 95% $CI [0.02, 0.39]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43$, $p = .023$), which subsequently led to an increase in advertising irritation ($b = 0.47$, $p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and advertising irritation. **H2b was supported.**

H3: Effects of perceived surveillance on (a) Aad: advertising attitudes, (b) Ab: brand attitudes, and (c) Ap: publisher attitudes.

To test H3a-c, three separate simple mediation analyses were conducted using PROCESS Macro Model 4 with 5000 bootstraps in R Statistical Software (Hayes, 2017).

Similarly, the OBA data-sharing extent was entered as a dummy-coded independent variable (0 = within-platform condition, 1 = cross-platform condition). Perceived surveillance was entered as the continuous mediator. Advertising attitudes (Aad), brand attitudes (Ab), and publisher attitudes (Ap) were entered as continuous dependent variables separately.

H3a predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and Aad. The direct effect of OBA data-sharing extent on Aad was not statistically significant (direct effect = -0.16 , $SE = 0.17$, $p = .356$, 95% $CI [-0.50, 0.18]$). However, the indirect effect through perceived surveillance was negative and significant (indirect effect = -0.16 , $SE = 0.07$, 95% $CI [-0.32, -0.02]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43$, $p = .023$), which subsequently led to a decrease in Aad ($b = -0.37$, $p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and Aad. **H3a was supported.**

H3b predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and Ab. The direct effect of OBA data-sharing extent on Ab was not statistically significant (direct effect = 0.03 , $SE = 0.16$, $p = .863$, 95% $CI [-0.29, 0.34]$). However, the indirect effect through perceived surveillance was negative and significant (indirect effect = -0.15 , $SE = 0.07$, 95% $CI [-0.30, -0.02]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-

platform condition ($b = 0.43, p = .023$), which subsequently led to a decrease in Ab ($b = -0.35, p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and Ab. **H3b was supported.**

H3c predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and Ap. The direct effect of OBA data-sharing extent on Ap was not statistically significant (direct effect = 0.04, $SE = 0.17, p = .804, 95\% CI [-0.30, 0.38]$). However, the indirect effect through perceived surveillance was negative and significant (indirect effect = $-0.14, SE = 0.07, 95\% CI [-0.29, -0.02]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43, p = .023$), which subsequently led to a decrease in Ap ($b = -0.32, p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and Ap. **H3c was supported.**

H4: Effects of perceived surveillance on (a) CTI: click-through intentions and (b) PI: purchase intentions.

To test H4a-b, two separate simple mediation analyses were conducted using PROCESS Macro Model 4 with 5000 bootstraps in R Statistical Software (Hayes, 2017). Similarly, the OBA data-sharing extent was entered as a dummy-coded independent variable (0 = within-platform condition, 1 = cross-platform condition). Perceived surveillance was entered as the continuous mediator. Click-through intentions (CTI) and purchase intentions (PI) were entered as continuous dependent variables separately.

H4a predicted that perceived surveillance would mediate the relationship between

OBA data-sharing extent and CTI. The direct effect of OBA data-sharing extent on CTI was not statistically significant (direct effect = 0.18, $SE = 0.21$, $p = .404$, 95% $CI [-0.24, 0.60]$). However, the indirect effect through perceived surveillance was negative and significant (indirect effect = -0.12 , $SE = 0.06$, 95% $CI [-0.27, -0.02]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43$, $p = .023$), which subsequently led to a decrease in CTI ($b = -0.28$, $p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and CTI. **H4a was supported.**

H4b predicted that perceived surveillance would mediate the relationship between OBA data-sharing extent and PI. The direct effect of OBA data-sharing extent on PI was not statistically significant (direct effect = 0.18, $SE = 0.18$, $p = .319$, 95% $CI [-0.18, 0.54]$). However, the indirect effect through perceived surveillance was negative and significant (indirect effect = -0.09 , $SE = 0.05$, 95% $CI [-0.20, -0.01]$). Specifically, participants in the cross-platform condition reported higher perceived surveillance compared to the within-platform condition ($b = 0.43$, $p = .023$), which subsequently led to a decrease in PI ($b = -0.21$, $p < .001$). In sum, the results revealed full mediation effects of perceived surveillance in the relationship between OBA data-sharing extent and PI. **H4b was supported.**

See Table 6 for the summary of the results of mediation analyses.

Table 6: Mediation analyses results in the main study

DV	Direct effect	Indirect effect (b)	95% CI	Decision
----	---------------	---------------------	--------	----------

Ad avoi.	-0.08	0.14 (0.33***)	[0.02, 0.29]	H2a supported
Ad irri.	-0.00	0.20 (0.47***)	[0.02, 0.39]	H2b supported
Aad	-0.16	-0.16 (-0.37***)	[-0.32, -0.02]	H3a supported
Ab	0.03	-0.15 (-0.35***)	[-0.30, -0.02]	H3b supported
Ap	0.04	-0.14 (-0.32***)	[-0.29, -0.02]	H3c supported
CTI	0.18	-0.12 (-0.28***)	[-0.27, -0.02]	H4a supported
PI	0.18	-0.09 (-0.21***)	[-0.20, -0.01]	H4b supported

Note. (1) DV = dependent variables; b = effects of perceived surveillance on corresponding DV; 95% CI = 95% confidence interval for the indirect effect estimated in the mediation analysis; Ad avoi. = advertising avoidance; Ad irri. = advertising irritation; Aad = advertising attitudes; Ab = brand attitudes; Ap = publisher attitudes; CTI = click-through intentions; PI = purchase intentions.

(2) Independent variable: OBA data-sharing extent; Mediator: perceived surveillance.

(3) Bold numbers indicate statistically significant results; *** denotes p-value < .001.

(4) Number of bootstraps for percentile bootstrap confidence intervals: 5000.

(5) The coefficients for direct and indirect effects are unstandardized.

Chapter 5: Discussion and Conclusion

General Discussion

The evolving technological advancements, particularly in big data, algorithms, and artificial intelligence, have given rise to Online Behavioral Advertising (OBA), which involves delivering personalized digital ads based on consumers' online activity data (Boerman et al., 2017). With the rise of mobile and cross-platform data tracking technologies, the amount and variety of personal information available to OBA advertisers are significantly expanding (Qin & Jiang, 2019; Xu et al., 2012). The continuous, pervasive, and invasive data-tracking underlying the OBA leads to consumers' feelings of being watched and listened to, which is called perceived surveillance (Strycharz & Segijn, 2022).

The purpose of this study is to examine how the extent of data sharing in OBA, distinguished by cross-platform vs. within-platform, influences consumers' perceived surveillance and subsequent advertising responses, i.e., advertising avoidance and irritation, attitudes toward the ad (A_{ad}), the brand (A_b), the publisher (A_p), as well as click-through (CTI) and purchase intentions (PI).

First, according to the experiment results, respondents in the cross-platform condition reported a significantly higher level of perceived surveillance than those in the within-platform condition. This suggests that consumers' feelings of being watched and listened to by corporations become stronger as their data is shared more extensively in OBA, with external data sharing leading to significantly higher perceived surveillance than internal

sharing.

This finding is consistent with previous research which indicates that the increased extent of data sharing in OBA heightens consumers' perceived risks and privacy concerns (Jai et al., 2013; Sutanto et al., 2013), which are closely intertwined with their cognitive evaluation. This study extends prior research by adding that the extent of OBA data sharing not only significantly influences consumers' cognitive processing of OBA, such as the tradeoff between risks and benefits (Jai et al., 2013), but also impacts their affective processing of the ad, particularly through their feelings of being watched and listened to.

Second, the results show the full mediating role of perceived surveillance in the relationship between OBA data-sharing extent and consumers' reactance responses. Specifically, the results show that as consumers' surveillance perceptions rise, their advertising avoidance and advertising irritation also increase accordingly. This is consistent with previous research indicating that consumers' perceived surveillance following exposure to OBA can trigger their psychological reactance, as consumers perceive their control over privacy is threatened (Farman et al., 2020; Ham, 2017). This finding is also consistent with previous research on traditional personalized advertising which suggests that when consumers perceive personalized ads as a threat to their perceived control over privacy or as intrusive to personal space, they are likely to experience psychological reactance, exhibiting avoidance behavioral intentions and experiencing feelings of irritation (Baek & Morimoto, 2012; Edwards et al., 2002).

This finding also resonates with surveillance literature, which suggests that individuals

experience discomfort and alter their behaviors in response to the perceived physical surveillance, such as feeling observed and followed while taking public transportation (Solove, 2006). Similarly, by expanding the scope of surveillance literature from offline to online settings, this study found that consumers also respond negatively when they perceive data surveillance in an online environment. This negative evaluation may stem from its violation of social norms, invasion of personal space, and threat to privacy (Farman et al., 2020; Solove, 2006). Furthermore, previous surveillance literature has primarily focused on political contexts where governments employ surveillance for governance (Marthews & Tucker, 2017; Solove, 2006), this study extends this line of research and reaffirms individuals' reactance and related negative responses following perceived surveillance in digital advertising contexts.

Third, in addition to triggering reactance responses, the results demonstrate that perceived surveillance significantly decreases the advertising effects of OBA. Specifically, increased perceived surveillance is associated with reduced advertising attitudes, brand attitudes, and publisher attitudes, as well as reduced intentions to click on the ad and to make a purchase. Overall, this finding resonates with previous research indicating that cross-platform data sharing triggers more privacy concerns than within-platform sharing, leading to decreased advertising effects (Jai et al., 2013; Sutanto et al., 2013). It underscores how consumers prioritize privacy issues over personalization benefits in response to the external data-sharing practices of OBA.

This finding also aligns with previous research indicating that perceived surveillance

can significantly and negatively impact consumers' advertising attitudes (Farman et al., 2020; Sifaoui, 2021), and these negative attitudes toward the OBA message can be carried over to the advertised brand and publisher (Ghanbarpour et al., 2022). This study also supports previous research that consumers' awareness of data surveillance activities can have chilling effects on their behaviors (Büchi et al., 2022). Consistently, perceived surveillance in this study significantly correlates with consumers' intentions to click on ads and make purchases. Given the established significant causal relationship between behavioral intentions and actual behavior (Webb & Sheeran, 2006), consumers' perceived surveillance is also expected to significantly relate to their actual clicking and purchasing behaviors.

Theoretical Implications

This study makes several theoretical contributions.

First, this study adds to the perceived surveillance literature by empirically validating the theoretical framework of Dataveillance Effects in Advertising Landscape (DEAL, Strycharz & Segijn, 2022) by demonstrating that when consumers encounter ads perceived as surveillance episodes, it triggers their surveillance perceptions, consequently impacting their advertising responses. Moreover, this study makes a unique contribution by exploring a dimension not previously examined: the extent of OBA data sharing and its impact on consumers' perceived surveillance and subsequent advertising responses. By delving into this aspect, the study sheds light on how the level of data sharing in OBA affects

consumers' perceptions of being monitored, thereby shaping their reactions to advertising messages.

Second, this study extends the existing OBA literature which primarily focuses on consumers' cognitive processing, such as the tradeoff between benefits and risks and privacy concerns (Jai et al., 2013; Kim & Huh, 2017), by elucidating how consumers' affective processing, specifically their feelings of being watched and listened to, can also result in adverse reactions.

Third, the study innovatively applies the Communication Privacy Management Theory (Petronio, 2010), which was originally proposed in the family relationship context and claims that violations of the perceived rules managing outside family members' access to personal information can result in feelings of invasion (Petronio, 2010), in the advertising domain. This study expands the application of this theory from a person-to-person context to a person-to-technology or person-to-corporation context, indicating that consumers consider digital platforms and corporations that collect their online activity data as recipients and co-owners of their privacy. When the perceived privacy rules are breached, consumers respond with negative cognitions and affection. This insight also provides a valuable direction for future research, suggesting that privacy issues in mass communication settings (e.g., advertising) could be investigated through an interpersonal perspective, as how media users manage their privacy with technologies or corporations that collect their data potentially parallel how they manage privacy in human relationships.

Practical Implications

The study found that consumers reported heightened surveillance perceptions and less positive advertising responses when they recognized their data was shared externally in OBA. This can be potentially explained by two reasons: First, consumers feel more invasive and more loss of control over privacy when their data is shared externally. Second, consumers typically do not expect their data to be externally processed, and this external data sharing violates their perceived privacy rules regarding the regulation of their online activity data. Based on these findings and potential underlying reasons, this study offers several recommendations to practitioners, particularly publishers (e.g., digital platforms and corporations), to enhance consumers' perceived control over their privacy. These recommendations include enhancing the visibility and transparency of disclosures regarding data collection and processing. Furthermore, this study suggests that regulatory agencies involve both advertising practitioners and consumers in the policy-making process to ensure openness and mutual understanding. The details are discussed as follows:

First, publishers could enhance consumers' perceived control over their privacy by providing detailed information on why, how, and what data are collected, processed, and shared in OBA. Research suggests that explaining the underlying mechanisms by which algorithms personalize the content of Facebook news feeds can increase users' perceived control over what they see (Rader et al., 2018). Also, research on location-based personalization services on mobile applications demonstrates that making the data collection and processing more overt and transparent can lead to higher perceived control

and greater user engagement (Chen & Sundar, 2018). Therefore, since OBA is one type of personalized media message driven by big data and algorithms (Boerman et al., 2017), it could similarly benefit from more transparent disclosures.

When providing disclosure information, another challenge arises, i.e., consumers' limited literacy and lack of cognitive resources to digest and comprehend this information. Although major digital platforms like Meta and TikTok transparently disclose their data tracking and sharing policies through user consent forms, cookie notices, and news reports (Alltech Asia, 2016; Meta, 2024), most consumers fail to actively digest this information due to limited time, capacity and motivation (Larsson et al., 2021; McDonald & Cranor, 2010; Smit et al., 2014). Additionally, many individuals express struggle to comprehend the terminology used within these documents (Marreiros et al., 2015; McDonald & Cranor, 2001). Therefore, publishers could design disclosure language and formats that require fewer cognitive resources and less time, catering to consumers with lower literacy levels, limited capacity, and time.

However, other studies have found that informing consumers about the underlying mechanisms of digital data-driven ads may lead to more critical attitudes, heightened perceived surveillance, and increased resistance (Segijn et al., 2023). Moreover, the impact of such knowledge on consumers' advertising responses varies based on individual differences. For example, Segijn et al. (2024) found that the effect of advertising knowledge on triggering surveillance perceptions is only significant among respondents with no related prior knowledge and experience. Bleier and Eisenbeiss (2015) found that

the benefits of personalization in OBA are more pronounced among those who trust online retailers, while privacy concerns toward OBA are more pronounced among those who mistrust them.

Therefore, given the inconsistent findings on the effects of transparent disclosures on consumers' advertising responses, this study refrains from claiming that increasing consumers' advertising knowledge will lead to more positive advertising outcomes. Specifically, practitioners should consider individual differences in multiple dimensions, such as privacy concerns, literacy levels, and trust toward digital platforms when designing disclosure strategies.

Second, as for regulatory agencies, it is important to involve both practitioners and consumers in the policy-making process. Multiple studies have identified the gap between consumers' expectations of data processing extent and actual industry practices (Larsson et al., 2021; Turow et al., 2008, 2009). Therefore, policymakers should facilitate a more transparent policy-making process, allowing individuals and practitioners to engage in dialogue to co-establish agreed-upon rules for managing their online activity data.

Limitations and Future Directions

This study has several limitations methodologically.

First, although the scenario-based experimental design enhances the internal validity of this study, it presents limitations in ecological validity. Participants were asked to imagine one of the two different scenarios before viewing simulated OBA messages, which are

processed consciously. However, this approach differs from how consumers typically encounter OBA messages in real-life settings where they encounter these ads unconsciously and inadvertently. Additionally, although the use of a single static image to simulate a TikTok ad strengthens the internal validity by excluding the contextual confounding factors, this approach lacks ecological validity as current OBA messages typically appear in cluttered environments and are integrated with organic media content and other advertising messages (Bol et al., 2018; Ha & McCann, 2008).

Second, in terms of sampling, over 40% of the respondents are over 35 years old, whereas the majority of TikTok users are below the age of 35 (Statista, 2024). This discrepancy may pose a threat to the generalizability of the results, as the study's sample does not accurately reflect the real age distribution of TikTok's primary users.

Third, although manipulation check results show that respondents are aware that their data is either internally or externally shared in two distinct scenarios, this might also threaten the generalizability of this study. OBA practices typically operate covertly, with many consumers unaware of the underlying data-tracking activities upon exposure (Boerman et al., 2017). Given that consumers' perceived surveillance and advertising responses to digital personalized ads differ significantly based on their awareness of the underlying data-tracking practices (Segijn et al., 2024), this heightened awareness triggered by the scenario could lead to an overestimation of the negative impact of cross-platform data sharing on consumers' perceived surveillance and advertising responses.

Fourth, the design of the consent form introduces potential validity issues. The consent

form informs respondents of the definition of OBA and its underlying mechanisms.

Previous research suggests that informed consumers' knowledge of digital ads and their underlying mechanisms significantly influence their surveillance perceptions (Segijn et al., 2024). Therefore, even if the relationship between OBA data-sharing extent and perceived surveillance is statistically significant in this study, the consent form shown at the beginning of the survey experiment may prime respondents to the underlying surveillance activities of the advertising messages used in the stimuli, thereby influencing the study results.

Fifth, the order of the questions in the questionnaire design may also influence the results. Previous studies have shown that the sequence in which questions and measures are presented can affect the study results, as the priming effects of earlier questions might influence respondents' answers to subsequent ones (Strack, 1992; Van De Walle & Van Ryzin, 2011). For instance, this study measures respondents' perceived surveillance before their attitudes and behavioral intentions toward the ad, and answering the scales for perceived surveillance, which is perceived to be invasive and violating social norms (Solove, 2006), may influence their reported attitudes and behavioral intentions.

These limitations offer valuable insights for future studies. First, future studies could use more unbiased experimental design, including consent form and questionnaire, as well as more representative sample, to enhance the validity of the study. Second, to improve ecological validity and generalizability, future studies could employ more realistic OBA message simulations and replicate the media environments where consumers encounter

such ads. This could involve using simulated or real websites with ad clutter, resembling real-life OBA contexts. Future studies could also use computational social science methods, such as big data analytics that track consumers' digital traces (Niemann-Lenz et al., 2019). These computational methods could go beyond measuring click-through and purchase intentions to capture actual consumer behaviors, providing a more ecologically valid and generalizable understanding of this topic.

Theoretically, future study could explore how individual differences in advertising knowledge and privacy concerns lead to different advertising responses to OBA. Advertising theory has highlighted the significant influence of consumers' knowledge and understanding of advertising tactics on their processing of ads and subsequent advertising responses (Friestad & Wright, 1994). Empirical research also suggests that consumers' surveillance perceptions and responses to personalized digital ads vary by their existing advertising knowledge (Segijn et al., 2024). Therefore, accounting for individual differences might be insightful when investigating consumer responses to OBA in future research.

Conclusion

This study examines the impact of data sharing extent on consumers' perceived surveillance and its subsequent effects on consumers' advertising responses toward Online Behavioral Advertising (OBA). The findings reveal that cross-platform OBA messages lead to a higher level of perceived surveillance than within-platform ones, which suggests that

consumers feel more closely watched and monitored when they are aware that their personal information is exchanged across different digital platforms. Furthermore, consumers' increased surveillance perceptions significantly relate to increased advertising avoidance and irritation, decreased advertising attitudes, brand attitudes, and publisher attitudes, as well as lower click-through intentions and purchase intentions. These results underscore the significance of perceived surveillance as a predictor of consumers' negative responses to OBA messages. Advertising practitioners could leverage these insights to understand consumer expectations regarding personal data management on digital platforms and promote more transparent OBA practices. Regulatory agencies can also learn from the discovered discrepancy between consumer expectations over data processing and the actual OBA practices and enhance more open policymaking by involving more relevant stakeholders. Future studies could explore how individual differences and advertising knowledge influence consumers' surveillance perceptions and advertising responses toward OBA, while also enhancing the ecological validity and generalizability of studies by employing more realistic stimuli, replicating the media environments where consumers encounter such ads, and analyzing real-life data through computational methods.

Bibliography

- Aaker, D. A., & Bruzzone, D. E. (1985). Causes of Irritation in Advertising. *Journal of Marketing*, 49(2).
- Aguirre, E., Mahr, D., Grewal, D., De Ruyter, K., & Wetzels, M. (2015). Unraveling the Personalization Paradox: The Effect of Information Collection and Trust-Building Strategies on Online Advertisement Effectiveness. *Journal of Retailing*, 91(1), 34–49. <https://doi.org/10.1016/j.jretai.2014.09.005>
- Aguirre, E., Roggeveen, A. L., Grewal, D., & Wetzels, M. (2016). The personalization-privacy paradox: Implications for new media. *Journal of Consumer Marketing*, 33(2), 98–110. <https://doi.org/10.1108/JCM-06-2015-1458>
- Alltech Asia. (2016). *News aggregator Toutiao now to aggregate JD.com's e-commerce*. AllTechAsia. <https://alltechasia.com/2016/09/28/news-aggregator-toutiao-now-to-aggregate-jd-coms-e-commerce/>
- Andrejevic, M., & Gates, K. (2014). Big Data Surveillance: Introduction. *Surveillance & Society*, 12(2), 185–196. <https://doi.org/10.24908/ss.v12i2.5242>
- Baek, T. H., & Morimoto, M. (2012). Stay Away From Me. *Journal of Advertising*, 41(1), 59–76. <https://doi.org/10.2753/JOA0091-3367410105>
- Bleier, A., & Eisenbeiss, M. (2015). The Importance of Trust for Personalized Online Advertising. *Journal of Retailing*, 91(3), 390–409. <https://doi.org/10.1016/j.jretai.2015.04.001>
- Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2017). Online Behavioral Advertising: A Literature Review and Research Agenda. *Journal of Advertising*, 46(3), 363–376. <https://doi.org/10.1080/00913367.2017.1339368>
- Bol, N., Dienlin, T., Kruikemeier, S., Sax, M., Boerman, S. C., Strycharz, J., Helberger, N., & de Vreese, C. H. (2018). Understanding the Effects of Personalization as a Privacy Calculus: Analyzing Self-Disclosure Across Health, News, and Commerce Contexts†. *Journal of Computer-Mediated Communication*, 23(6), 370–388. <https://doi.org/10.1093/jcmc/zmy020>
- Brehm, J. W. (1966). *A theory of psychological reactance* (pp. x, 135). Academic Press.
- Brehm, S. S., & Brehm, J. W. (2013). *Psychological Reactance: A Theory of Freedom and Control*. Academic Press.
- Büchi, M., Festic, N., & Latzer, M. (2022). The Chilling Effects of Digital Dataveillance: A Theoretical Model and an Empirical Research Agenda. *Big Data & Society*, 9(1), 20539517211065368. <https://doi.org/10.1177/20539517211065368>
- Bulgurcu, B., Cavusoglu, H., & Benbasat, I. (2010). Understanding emergence and outcomes of information privacy concerns: A case of Facebook. *ICIS 2010 Proceedings*. https://aisel.aisnet.org/icis2010_submissions/230
- Burke, M., & Edell, J. (1989). The Impact of Feelings on Ad-Based Affect and Cognition. *Journal of Marketing Research*, 26, 69–83. <https://doi.org/10.1177/002224378902600106>
- Charness, G., Gneezy, U., & Kuhn, M. A. (2012). Experimental methods: Between-subject and within-subject design. *Journal of Economic Behavior & Organization*, 81(1), 1–8.

- <https://doi.org/10.1016/j.jebo.2011.08.009>
- Chen, J., & Stallaert, J. (2014). An economic analysis of online advertising using behavioral targeting. *Mis Quarterly*, 429(A7).
- Chen, T.-W., & Sundar, S. S. (2018). This App Would Like to Use Your Current Location to Better Serve You: Importance of User Assent and System Transparency in Personalized Mobile Services. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–13. <https://doi.org/10.1145/3173574.3174111>
- Christl, W. (2017). *Corporate Surveillance In Everyday Life. How Companies Collect, Combine, Analyze, Trade, and Use Personal Data on Billions*. <http://crackedlabs.org/en/corporate-surveillance>
- Dillard, J. P., & Shen, L. (2005). On the Nature of Reactance and its Role in Persuasive Health Communication. *Communication Monographs*, 72(2), 144–168. <https://doi.org/10.1080/03637750500111815>
- Edwards, S. M., Li, H., & Lee, J.-H. (2002). Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-Up Ads. *Journal of Advertising*, 31(3), 83–95. <https://doi.org/10.1080/00913367.2002.10673678>
- Enck, W., Gilbert, P., Han, S., Tendulkar, V., Chun, B.-G., Cox, L. P., Jung, J., McDaniel, P., & Sheth, A. N. (2014). TaintDroid: An Information-Flow Tracking System for Realtime Privacy Monitoring on Smartphones. *ACM Transactions on Computer Systems*, 32(2), 1–29. <https://doi.org/10.1145/2619091>
- Farman, L., Comello, M. L. (Nori), & Edwards, J. R. (2020). Are Consumers Put off by Retargeted Ads on Social Media? Evidence for Perceptions of Marketing Surveillance and Decreased Ad Effectiveness. *Journal of Broadcasting & Electronic Media*, 64(2), 298–319. <https://doi.org/10.1080/08838151.2020.1767292>
- Federal Trade Commission. (2009a, February 1). *Federal Trade Commission Staff Report: Self-Regulatory Principles For Online Behavioral Advertising: Tracking, Targeting, and Technology*. Federal Trade Commission. <https://www.ftc.gov/reports/federal-trade-commission-staff-report-self-regulatory-principles-online-behavioral-advertising>
- Federal Trade Commission. (2009b, April). *Beyond Voice: Mapping the Mobile Marketplace*. <https://www.ftc.gov/reports/beyond-voice-mapping-mobile-marketplace-federal-trade-commission-staff-report>
- Fisher, R. J., & Dubé, L. (2005). Gender Differences in Responses to Emotional Advertising: A Social Desirability Perspective. *Journal of Consumer Research*, 31(4), 850–858. <https://doi.org/10.1086/426621>
- Frick, N. R. J., Wilms, K. L., Brachten, F., Hetjens, T., Stieglitz, S., & Ross, B. (2021). The perceived surveillance of conversations through smart devices. *Electronic Commerce Research and Applications*, 47, 101046. <https://doi.org/10.1016/j.elerap.2021.101046>
- Friestad, M., & Wright, P. (1994). The Persuasion Knowledge Model: How People Cope with Persuasion Attempts. *Journal of Consumer Research*, 21(1), 1. <https://doi.org/10.1086/209380>
- Geuens, M., & De Pelsmacker, P. (2017). Planning and Conducting Experimental Advertising Research and Questionnaire Design. *Journal of Advertising*, 46(1), 83–100.

- <https://doi.org/10.1080/00913367.2016.1225233>
- Ghanbarpour, T., Sahabeh, E., & Gustafsson, A. (2022). Consumer response to online behavioral advertising in a social media context: The role of perceived ad complicity. *Psychology & Marketing*, 39(10), 1853–1870. <https://doi.org/10.1002/mar.21703>
- Gupta, S., Yun, H., Xu, H., & Kim, H.-W. (2017). An exploratory study on mobile banking adoption in Indian metropolitan and urban areas: A scenario-based experiment. *Information Technology for Development*, 23(1), 127–152. <https://doi.org/10.1080/02681102.2016.1233855>
- Ha, L., & McCann, K. (2008). An integrated model of advertising clutter in offline and online media. *International Journal of Advertising*, 27(4), 569–592. <https://doi.org/10.2501/S0265048708080153>
- Ham, C.-D. (2017). Exploring how consumers cope with online behavioral advertising. *International Journal of Advertising*, 36(4), 632–658. <https://doi.org/10.1080/02650487.2016.1239878>
- Hannak, A., Soeller, G., Lazer, D., Mislove, A., & Wilson, C. (2014). Measuring Price Discrimination and Steering on E-commerce Web Sites. *Proceedings of the 2014 Conference on Internet Measurement Conference*, 305–318. <https://doi.org/10.1145/2663716.2663744>
- Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis, Second Edition: A Regression-Based Approach*. Guilford Publications.
- Hoffman, D. L., Novak, T. P., & Peralta, M. (1999). Building consumer trust online. *Communications of the ACM*, 42(4), 80–85. <https://doi.org/10.1145/299157.299175>
- Jai, T.-M. (Catherine), Burns, L. D., & King, N. J. (2013). The effect of behavioral tracking practices on consumers' shopping evaluations and repurchase intention toward trusted online retailers. *Computers in Human Behavior*, 29(3), 901–909. <https://doi.org/10.1016/j.chb.2012.12.021>
- Keselman, H. J., Othman, A. R., Wilcox, R. R., & Fradette, K. (2004). The New and Improved Two-Sample t Test. *Psychological Science*, 15(1), 47–51. <https://doi.org/10.1111/j.0963-7214.2004.01501008.x>
- Kim, H., & Huh, J. (2017). Perceived Relevance and Privacy Concern Regarding Online Behavioral Advertising (OBA) and Their Role in Consumer Responses. *Journal of Current Issues & Research in Advertising*, 38(1), 92–105. <https://doi.org/10.1080/10641734.2016.1233157>
- Kim, J.-H., & Jang, S. (Shawn). (2014). A scenario-based experiment and a field study: A comparative examination for service failure and recovery. *International Journal of Hospitality Management*, 41, 125–132. <https://doi.org/10.1016/j.ijhm.2014.05.004>
- Kim, T., Barasz, K., & John, L. K. (2019). Why Am I Seeing This Ad? The Effect of Ad Transparency on Ad Effectiveness. *Journal of Consumer Research*, 45(5), 906–932. <https://doi.org/10.1093/jcr/ucy039>
- King, J. (2023). *Native advertising: What it is and how it benefits advertisers and publishers*. Insider Intelligence. <https://www.insiderintelligence.com/insights/native-ad-spending/>
- Kitchin, R., & McArdle, G. (2016). What makes Big Data, Big Data? Exploring the

- ontological characteristics of 26 datasets. *Big Data & Society*, 3(1), 205395171663113. <https://doi.org/10.1177/2053951716631130>
- Larsson, S., Jensen-Urstad, A., & Heintz, F. (2021). Notified But Unaware: Third-Party Tracking Online. *Critical Analysis of Law*, 8(1), 101–120. <https://doi.org/10.33137/cal.v8i1.36282>
- Lee, E. B., Lee, S. G., & Yang, C. G. (2017). The influences of advertisement attitude and brand attitude on purchase intention of smartphone advertising. *Industrial Management and Data Systems*, 117(6), 1011–1036. <https://doi.org/10.1108/IMDS-06-2016-0229>
- Lefever, S., Dal, M., & Matthíasdóttir, Á. (2007). Online data collection in academic research: Advantages and limitations. *British Journal of Educational Technology*, 38(4), 574–582. <https://doi.org/10.1111/j.1467-8535.2006.00638.x>
- Li, H. (2019). Special Section Introduction: Artificial Intelligence and Advertising. *Journal of Advertising*, 48(4), 333–337. <https://doi.org/10.1080/00913367.2019.1654947>
- Li, J., & Ma, Y. (2023). Virtual Influencers in Advertisements: Examining the Role of Authenticity and Identification. *Journal of Interactive Advertising*, 1–12. <https://doi.org/10.1080/15252019.2023.2270478>
- Liu, J., Zhong, W., Zhang, J., & Mei, S. (2023). The effectiveness of cross-platform targeted advertising strategy. *Electronic Commerce Research*. <https://doi.org/10.1007/s10660-022-09659-0>
- Ma, Y., & Li, J. (2024). How humanlike is enough?: Uncover the underlying mechanism of virtual influencer endorsement. *Computers in Human Behavior: Artificial Humans*, 2(1), 100037. <https://doi.org/10.1016/j.chbah.2023.100037>
- MacKenzie, S. B., & Lutz, R. J. (1989). An Empirical Examination of the Structural Antecedents of Attitude toward the Ad in an Advertising Pretesting Context. *Journal of Marketing*, 53(2), 48–65. <https://doi.org/10.1177/002224298905300204>
- Marreiros, H., Gomer, R., & Tonin, M. (2015). *Exploring user perceptions of online privacy disclosures*.
- Marthews, A., & Tucker, C. E. (2017). *Government Surveillance and Internet Search Behavior* (SSRN Scholarly Paper 2412564). <https://doi.org/10.2139/ssrn.2412564>
- McDonald, A. M., & Cranor, L. F. (2001). An Empirical Study of How People Perceive Online Behavioral Advertising. *ACM Transactions on Internet Technology*, 1(2), 151–198. <https://doi.org/10.1145/502152.502153>
- McDonald, A. M., & Cranor, L. F. (2010). Americans' attitudes about internet behavioral advertising practices. *Proceedings of the 9th Annual ACM Workshop on Privacy in the Electronic Society*, 63–72.
- Meta. (2024). *About Facebook Ads*. https://www.facebook.com/ads/about/?entry_product=ad_library
- Metzger, M. J. (2007). Communication Privacy Management in Electronic Commerce. *Journal of Computer-Mediated Communication*, 12(2), 335–361. <https://doi.org/10.1111/j.1083-6101.2007.00328.x>
- Mitchell, A. A., & Olson, J. C. (1981). Are Product Attribute Beliefs the Only Mediator of Advertising Effects on Brand Attitude? *Journal of Marketing Research*, 18(3), 318–332.

- <https://doi.org/10.1177/002224378101800306>
- Morimoto, M., & Chang, S. (2009). Psychological Factors Affecting Perceptions of Unsolicited Commercial E-mail. *Journal of Current Issues & Research in Advertising*, 31(1), 63–73. <https://doi.org/10.1080/10641734.2009.10505257>
- Nass, C., Steuer, J., & Tauber, E. R. (1994). Computers are social actors. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 72–78. <https://doi.org/10.1109/VSMM.2014.7136659>
- Niemann-Lenz, J., Bruns, S., Hefner, D., Knop-Hülß, K., Possler, D., Reich, S., Reinecke, L., Scheper, J., & Klimmt, C. (2019). Computational Communication Science| Crafting a Strategic Roadmap for Computational Methods in Communication Science: Learnings From the CCS 2018 Conference in Hanover – Commentary. *International Journal of Communication*, 13(0), Article 0.
- Nowak, G. J., & Phelps, J. (1995). Direct marketing and the use of individual-level consumer information: Determining how and when “privacy” matters. *JOURNAL OF DIRECT MARKETING*, 9(3).
- Pavlou, P. (2005). Understanding and mitigating uncertainty in online environments: A longitudinal analysis of the role of trust and social presence. *Academy of Management Proceedings*, 2005(1), H1–H6. <https://doi.org/10.5465/ambpp.2005.18781473>
- Pavlou, P. A., & Stewart, D. W. (2000). Pavlou, Paul A., and David W. Stewart. "Measuring the effects and effectiveness of interactive advertising: A research agenda. *Journal of Interactive Advertising*, 1(1), 61–77.
- Petronio, S. (2010). Communication Privacy Management Theory: What Do We Know About Family Privacy Regulation? *Journal of Family Theory & Review*, 2(3), 175–196. <https://doi.org/10.1111/j.1756-2589.2010.00052.x>
- Phelan, C., Lampe, C., & Resnick, P. (2016). It’s Creepy, But it Doesn’t Bother Me. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 5240–5251. <https://doi.org/10.1145/2858036.2858381>
- Qin, X., & Jiang, Z. (2019). The Impact of AI on the Advertising Process: The Chinese Experience. *Journal of Advertising*, 48(4), 338–346. <https://doi.org/10.1080/00913367.2019.1652122>
- Rader, E., Cotter, K., & Cho, J. (2018). Explanations as Mechanisms for Supporting Algorithmic Transparency. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–13. <https://doi.org/10.1145/3173574.3173677>
- Sahni, N. S., Wheeler, S. C., & Chintagunta, P. (2018). Personalization in Email Marketing: The Role of Noninformative Advertising Content. *Marketing Science*. <https://doi.org/10.1287/mksc.2017.1066>
- Sannon, S., Stoll, B., DiFranzo, D., Jung, M. F., & Bazarova, N. N. (2020). “I just shared your responses”: Extending Communication Privacy Management Theory to Interactions with Conversational Agents. *Proceedings of the ACM on Human-Computer Interaction*, 4(GROUP), 1–18. <https://doi.org/10.1145/3375188>
- Schouten, A. P., Janssen, L., & Verspaget, M. (2020). Celebrity vs. Influencer endorsements in advertising: The role of identification, credibility, and Product-Endorser fit.

- International Journal of Advertising*, 39(2), 258–281.
<https://doi.org/10.1080/02650487.2019.1634898>
- Schutt, R. K. (2018). *Investigating the Social World: The Process and Practice of Research*. SAGE Publications.
- Segijn, C. M., Kim, E., Lee, G., Gansen, C., & Boerman, S. C. (2024). The intended and unintended effects of synced advertising: When persuasion knowledge could help or backfire. *International Journal of Research in Marketing*, 41(1), 156–169.
<https://doi.org/10.1016/j.ijresmar.2023.07.001>
- Segijn, C. M., Kim, E., Sifaoui, A., & Boerman, S. C. (2023). When you realize that big brother is watching: How informing consumers affects synced advertising effectiveness. *Journal of Marketing Communications*, 29(4), 317–338.
<https://doi.org/10.1080/13527266.2021.2020149>
- Segijn, C. M., Oprea, S. J., & Van Ooijen, I. (2022). The validation of the Perceived Surveillance Scale. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 16(3). <https://doi.org/10.5817/CP2022-3-9>
- Sifaoui, A. (2021). “*We Know What You See, so Here’s an Ad!*” *Online Behavioral Advertising and Surveillance on Social Media in an Era of Privacy Erosion* [M.A.]. <https://www.proquest.com/docview/2572606758/abstract/8A0C1A5F66D4D38PQ/1>
- Smit, E. G., Van Noort, G., & Voorveld, H. A. M. (2014). Understanding online behavioural advertising: User knowledge, privacy concerns and online coping behaviour in Europe. *Computers in Human Behavior*, 32, 15–22. <https://doi.org/10.1016/j.chb.2013.11.008>
- Solove, D. J. (2006). A Taxonomy of Privacy. *University of Pennsylvania Law Review*, 154(3), 477–564. <https://doi.org/10.2307/40041279>
- Spears, N., & Singh, S. (2004). Measuring Attitude Toward the Brand and Purchase Intentions. *Journal of Current Issues and Research in Advertising*, 26, 53–66.
<https://doi.org/10.1080/10641734.2004.10505164>
- Speck, P. S., & Elliott, M. T. (1997). Predictors of Advertising Avoidance in Print and Broadcast Media. *Journal of Advertising*, 26(3), 61–76.
<https://doi.org/10.1080/00913367.1997.10673529>
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845–851.
<https://doi.org/10.1037/0022-3514.89.6.845>
- Stantcheva, S. (2023). How to Run Surveys: A Guide to Creating Your Own Identifying Variation and Revealing the Invisible. *Annual Review of Economics*, 15(1), 205–234.
<https://doi.org/10.1146/annurev-economics-091622-010157>
- Statista. (2023). *Market share of leading retail e-commerce companies in the United States in 2023*. Statista. <https://www.statista.com/statistics/274255/market-share-of-the-leading-retailers-in-us-e-commerce/>
- Statista. (2024). *Global TikTok user age and gender distribution 2024*. Statista. <https://www.statista.com/statistics/1299771/tiktok-global-user-age-distribution/>
- Stein, J. (2011, October 3). Data Mining: How Companies Now Know Everything About

- You. *Time*. <https://content.time.com/time/magazine/article/0,9171,2058205,00.html>
- Strack, F. (1992). "Order Effects" in Survey Research: Activation and Information Functions of Preceding Questions. In N. Schwarz & S. Sudman (Eds.), *Context Effects in Social and Psychological Research* (pp. 23–34). Springer. https://doi.org/10.1007/978-1-4612-2848-6_3
- Strycharz, J., & Segijn, C. M. (2022). The Future of Dataveillance in Advertising Theory and Practice. *Journal of Advertising*, 51(5), 574–591. <https://doi.org/10.1080/00913367.2022.2109781>
- Sutanto, J., Palme, E., Chuan-Hoo Tan, & Chee Wei Phang. (2013). Addressing the Personalization-Privacy Paradox: An Empirical Assessment from a Field Experiment on Smartphone Users. *MIS Quarterly*, 37(4), 1141-A5.
- TikTok. (2022). *TikTok Works: Driving Full-Funnel Impact for Advertisers and Brands / TikTok For Business Blog*. TikTok For Business. <https://www.tiktok.com/business/en-US/blog/tiktok-works-driving-full-funnel-impact-power-of-digital>
- Turow, J., Hennessy, M., & Bleakley, A. (2008). Consumers' Understanding of Privacy Rules in the Marketplace. *Journal of Consumer Affairs*, 42(3), 411–424. <https://doi.org/10.1111/j.1745-6606.2008.00116.x>
- Turow, J., King, J., Hoofnagle, C. J., Bleakley, A., & Hennessy, M. (2009). Americans Reject Tailored Advertising and Three Activities that Enable It. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1478214>
- Van De Walle, S., & Van Ryzin, G. G. (2011). The Order of Questions in a Survey on Citizen Satisfaction with Public Services: Lessons from a Split-Ballot Experiment. *Public Administration*, 89(4), 1436–1450. <https://doi.org/10.1111/j.1467-9299.2011.01922.x>
- Van Reijmersdal, E. A., Boerman, S. C., & Noort, G. V. (2022). Effects of online behaviorally targeted native advertising on persuasion: A test of two competing mechanisms. *Computers in Human Behavior Reports*, 7, 100221. <https://doi.org/10.1016/j.chbr.2022.100221>
- Warshaw, P. R., & Davis, F. D. (1985). Disentangling behavioral intention and behavioral expectation. *Journal of Experimental Social Psychology*, 21(3), 213–228. [https://doi.org/10.1016/0022-1031\(85\)90017-4](https://doi.org/10.1016/0022-1031(85)90017-4)
- Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, 132(2), 249–268. <https://doi.org/10.1037/0033-2909.132.2.249>
- White, T. B., Zahay, D. L., Thorbjørnsen, H., & Shavitt, S. (2008). Getting too personal: Reactance to highly personalized email solicitations. *Marketing Letters*, 19(1), 39–50. <https://doi.org/10.1007/s11002-007-9027-9>
- Xu, H., Gupta, S., Rosson, M. B., & Carroll, J. M. (2012). *Measuring mobile users' concerns for information privacy*.
- Xu, H., Oh, L. B., & Teo, H. H. (2009). Perceived effectiveness of text vs. Multimedia Location-Based Advertising messaging. *International Journal of Mobile Communications*, 7(2), 154–177. <https://doi.org/10.1504/IJMC.2009.022440>
- Yi, Y. (1990). Cognitive and Affective Priming Effects of the Context for Print

Advertisements. *Journal of Advertising*, 19(2), 40–48.
<https://doi.org/10.1080/00913367.1990.10673186>

Youn, S., & Kim, S. (2019). Understanding ad avoidance on Facebook: Antecedents and outcomes of psychological reactance. *Computers in Human Behavior*, 98, 232–244.
<https://doi.org/10.1016/j.chb.2019.04.025>

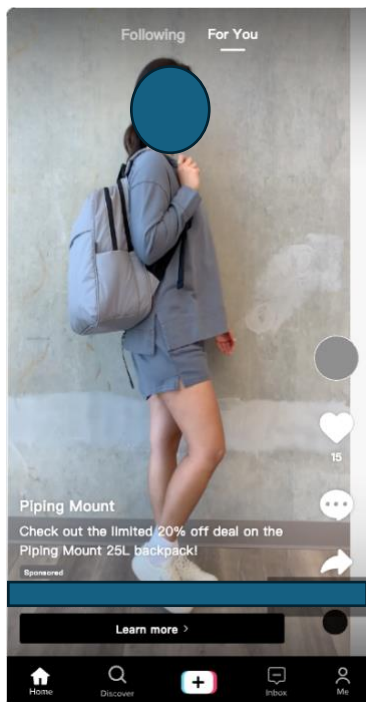
Appendix A. Stimulus Design

Cross-platform condition:

Imagine that you searched for Backpacks from the brand Piping Mount on Amazon three days ago.



Today, when you are browsing TikTok as usual, you come across the following ad:

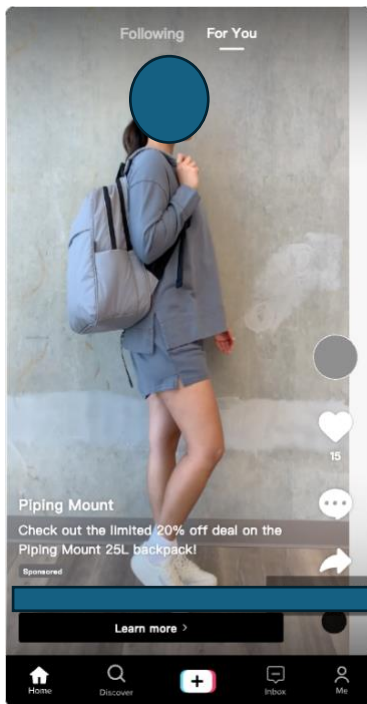


Within-platform condition:

Imagine that you searched for Backpacks from the brand Piping Mount on TikTok three days ago.



Today, when you are browsing TikTok as usual, you come across the following ad:



Appendix B. Survey Experiment Design

Part 1: Consent form

Welcome to the research study!

Hello! We'd like to know what you think about Online Behavioral Advertising (OBA). OBA is a type of digital advertising that uses info about what you do online, such as your browsing history and purchases, to show you ads that match your interests. It tracks your activities across websites, apps, and other online places to figure out what you like. Then, it uses this info to show you ads that are more personalized to your tastes.

For this study, you'll start by imagining a scenario, then you'll watch a TikTok ad. After watching the ad, you'll be asked to answer a series of questions. Please feel free to report your genuine feelings and all your responses will be kept completely confidential.

The study should take you around 5-7 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study. The Principal Investigator of this study can be contacted at Jingren Li (li002779@umn.edu).

By clicking the button below, you acknowledge:

- Your participation in the study is voluntary.
- You are 18 years of age.
- You currently live in the U.S.
- You are aware that you may choose to terminate your participation at any time for any reason.

Now, please read carefully the following information. The page will move on in 10 seconds.

[Stimuli inserted]

Part 2: Measurement of the mediator - Perceived surveillance

When you saw the TikTok ad in the imagined scenario, to what extent did you feel that the company is:

	1(Strongly disagree)	2	3	4	5	6	7(Strongly agree)
The company is watching my every move							
The company is checking up on me							
The company is looking over my shoulder							
The company is entering my private space							

*The statements are in randomized order

Part 3: Measurement of dependent variables

*All of the following questions blocks and statements are in randomized order

➤ Advertising irritation:

When you saw the TikTok ad in the imagined scenario, to what extent do you agree or disagree with the following statements?

	1(Strongly disagree)	2	3	4	5	6	7(Strongly agree)
I think the TikTok ad is irritating							
I think the TikTok ad is annoying to me							
I feel that the TikTok ad is confusing							
I think the TikTok ad is messy							
I think the TikTok ad is deceptive to me							

➤ Advertising avoidance:

When you saw the TikTok ad in the imagined scenario, to what extent do you agree or disagree with the following statements?

	1(Strongly disagree)	2	3	4	5	6	7(Strongly agree)
I will ignore this TikTok ad							
I will not pay attention to this TikTok ad							
I will gloss over this kind of TikTok ad							
I will stay away from this TikTok ad							
I will ask TikTok to block this ad if I could							

➤ Click-through and purchase intentions:

When you saw the TikTok ad in the imagined scenario, to what extent do you agree or disagree with the following statements?

	1(Strongly disagree)	2	3	4	5	6	7(Strongly agree)
I would like to click on the TikTok ad to get further information							
I would like to buy							

Piping Mount's backpack							
I intend to buy Piping Mount's backpack							
I'm interested in purchasing Piping Mount's backpack							
I would probably buy Piping Mount's backpack							

➤ Advertising attitudes:

I think the TikTok ad in the imagined scenarios is:

	1	2	3	4	5	6	7	
Unappealing								Appealing
Bad								Good
Unpleasant								Pleasant
Unfavorable								Favorable
Unlikable								Likable

➤ Brand attitudes:

I think the TikTok ad in the imagined scenario makes the brand Piping Mount:

	1	2	3	4	5	6	7	
Unappealing								Appealing
Bad								Good
Unpleasant								Pleasant
Unfavorable								Favorable
Unlikable								Likable

➤ **Publisher attitudes:**

I think the TikTok ad in the imagined scenario makes the social media platform TikTok:

	1	2	3	4	5	6	7	
Unappealing								Appealing
Bad								Good
Unpleasant								Pleasant
Unfavorable								Favorable
Unlikable								Likable

Part 4: Manipulation check

Now, please read carefully the following information. The page will advance in 10

seconds.

[Stimuli inserted]

➤ Manipulation check items:

When you saw the TikTok ad in the imagined scenario, to what extent do you agree or disagree with the following statements?

	1(Strongly disagree)	2	3	4	5	6	7(Strongly agree)
This TikTok ad utilizes data about me from sources external to TikTok / outside the TikTok							
This TikTok ad utilizes data about me from sources internal to TikTok / inside the TikTok							

Part 5: Demographic information collection

1. How do you describe yourself?

- Male
- Female
- Non-binary/third gender
- Prefer to self-describe.
- Prefer not to say.

2. How old are you?

- Under 18
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65+ years old

3. Choose one or more races that you consider yourself to be:

- White or Caucasian
- Black or African American
- American Indian/Native American or Alaska Native
- Asian
- Native Hawaiian or Other Pacific Islander
- Other
- Prefer not to say

4. What is the highest level of education you have completed?

- Some high schools or less
 - High school diploma or GED
 - Some college, but no degree
 - Associate or technical degree
 - Bachelor's degree
 - Graduate or professional degree (MA, MS, MBA, Ph.D., JD, MD, DDS, etc.)
 - Prefer not to say.
5. How many hours do you spend on social media every day? (such as TikTok, Instagram, Facebook, and Twitter)
- less than 1 hour per day
 - 1-3 hours per day
 - 3-5 hours per day
 - 5-7 hours per day
 - More than 7 hours per day
6. How often do you use online retailers (such as Amazon and eBay)?
- Less than once a month
 - Once a month
 - 2-3 times a month
 - Once a week
 - More than once a week
7. What do you think of TikTok?
- Like a great deal
 - Like somewhat
 - Neither like nor dislike
 - Dislike somewhat
 - Dislike a great deal
8. What do you think of Amazon?
- Like a great deal
 - Like somewhat
 - Neither like nor dislike
 - Dislike somewhat
 - Dislike a great deal

Part 6: Debrief of the study purpose

Thank you for participating in the survey. Your input is invaluable to our study, which aims to understand how consumers react to online behavioral ads that utilize their data, whether it's external or internal to the platform where the ad is displayed. We sincerely appreciate your patience and cooperation throughout the survey.

[Redirect to URL to get paid]

End of the survey