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„Online Behavioral Advertising: How Aware and Affected Are Users by Personalized Advertisements?"

verfasst von / submitted by

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Introduction

Recently, advertisements have been available both offline and online, visible on almost all online websites and platforms, and providing information on a whole variety of products and services (Li & Nill, 2020). Some scholars see online advertising as the future of advertising because of its high usage and visibility throughout the last few years (Boerman et al., 2017). However, advertisers increasingly employ targeting practices to provide users with content that is personalized to their online activities and behaviors (Aguirre et al., 2015; Zhang & Mao, 2016). For this reason, as many users portray positive attitudes about personalized ads, many others express distrust about seeing ads that match their interests and preferences (Childers & Boatwright, 2021; Li & Nill, 2020). Ultimately, users are the ones whose privacy is endangered because, more often than not, they are not present or aware of the online data collection for better advertising suggestions (Li & Nill, 2020).

Online behavioral targeting (OBA) refers to delivering highly personalized advertising messages to individuals by collecting an abundance of various data through their online behaviors and activities (Ham, 2017; Smit et al., 2014). This process includes a classification of the target audience by their characteristics, including sociodemographic characteristics, preferences, and their user or online consumer behavior, so that they are provided with personalized ads that match their interests (Li & Nill, 2020; Nill & Aalberts, 2014). While this is an effective targeting practice for advertisers and marketers, it comes with the price of violating users' privacy and raising many unease over data misuse (Boerman et al., 2017; Nill & Aalberts, 2014). Lately, and due to many online privacy concerns, it has grabbed more attention from the regulatory side to create better privacy-protective programs (Boerman et al., 2017).

Arguably, users are primarily ignorant of personal data processing and are not included in the process of analyzing their privacy for consumer profit (Li & Nill, 2020).

Hence, they express negative feelings, such as concern, powerlessness, and distrust (Boerman & Smit, 2023; Smit et al., 2014). They feel that online tracking measures are invasive and negative and that they demonstrate privacy violations and misuse of personal information (McDonald & Cranor, 2010; Smit et al., 2014). Because many users perceive these tracking behaviors, it makes them feel adversely, as if they do not have a choice in the matter or any control over it (Boerman et al., 2017).

Some groups are even more prone to feel targeted, while others are found to be more indifferent. For instance, younger users, as well as males, are, according to previous research, seen as less aware and less concerned about OBA and online targeting practices (Hoy & Milne, 2010; Zarouali et al., 2020). Other studies indicate that older users and women are seen as the ones more careful about their privacy (Okazaki, 2007; Smit et al., 2014). They are also better at perceiving privacy risks and taking more proactive privacy-protective measures (Okazaki, 2007; Smit et al., 2014; Tifferet, 2019). What is more, women are shown to be less open and favorable about being tracked online (Dobber et al., 2019; Hoy & Milne, 2010). Not just that, but further research also shows that spending time online can impact users' awareness and negative feelings about online privacy, with users using social networking sites less frequently, if they are more concerned and worried about their privacy (Cha, 2010).

Ultimately, none of the studies before, to the best of the researcher's knowledge, have yet analyzed the impact the frequency of social media usage, age, and gender have on users' awareness and negative feelings over being targeted online. Even though previous research explores on tailored advertising and OBA (Ham, 2017; McDonald & Cranor, 2010), they mainly focus on the whole generation without an emphasis on different types of users that have different opinions and feelings over personalized advertising. Likewise, other studies mostly concentrate on just generational or gender differences, without the connection to social media usage. The current study, therefore, tries to answer the research question: "How aware

and affected are different types of users by personalized advertising?" The study aims to gain more insight into the users' online targeting perception, with the leading research interest being equally generational, gender, and social media activity differences. This way, further implications could be seen in the differences of opinions and feelings of distinctive online users. To answer the research question, an online survey in *SoSci Survey* was shared among Austrian students of all genders studying at different universities and departments. The study focused on Generation Z in a 10-year sample to investigate if former research could be applied in a university setting and with a university sample.

This study brings insightful findings contributing to the marketing, communications, public relations, and privacy fields. The findings may interest national, international, and global policymakers in producing stricter laws against online targeting because by knowing what is bothering users in their user experience, the difficulties could be eliminated, and better solutions found. The present study is important because it addresses how users feel and perceive OBA, without marketing associations, to be able to deduce how serious they feel and think about their online privacy being targeted and the personalized content they see. It also sheds light on the differences of social media users depending on age, gender, and frequency of usage regarding targeted advertising, which is something that has not been done until now. By understanding the users and their stances, it is also possible to act in a way that can benefit them during their social media experience. The study first provides the current state of the art, after which come the method, results, and discussion parts.

Literature Review

Online Behavioral Advertising (OBA)

Online advertising is often used nowadays to offer users relevant advertisements and to reduce the time it takes to find products online (McDonald & Cranor, 2010). As mentioned, a technique used to deliver users the most relevant advertisement by collecting, monitoring, and tracking detailed data about their online activities and behaviors is called *online behavioral advertising* (OBA) (Boerman et al., 2017; Nill & Aalberts, 2014). This data can be combined with demographic and geographic information to create more specific user profiles for successfully presenting the users with highly specific, tailored messages about products and services (Boerman et al., 2017; McDonald & Cranor, 2010; Nill & Aalberts, 2014

OBA is, therefore, a form of targeted advertising and, as seen by advertisers, one of the most important new ways of reaching the target audience (Boerman et al., 2017; McDonald & Cranor, 2010). The advertisement is created out of personalized content because advertisers can then target individualized messages that match users' interests and preferences for them to receive better response and buying rates (Ham, 2017). Moreover, since people use more online services and leave more digital footprints than before, it is easier to create better, more particular profiles of individuals (Dobber et al., 2019). The personalized ads users ultimately receive depend on, e.g., users' age range, gender, websites the users have visited, their search terms, products they purchased, other online behaviors, and consumer habits (Boerman et al., 2017; Li & Nill, 2020; McDonald & Cranor, 2010; Nill & Aalberts, 2014)..

Because there is a potential that the users are more responsive to personally relevant messages than generic ones, this process has great marketing and advertising benefits (Boerman et al., 2017; Dobber et al., 2023). By offering the users with more specialized content, advertisers are ensuring higher profits and better product interest instead of wasting money on generic advertising that is the same for all users (Ham, 2017). This is also done

because universal advertisements create more irritation from users' side because they are offered with products they find irrelevant or not needed (Ham, 2017; Zhang & Mao, 2016).

It is also seen as part of the future of advertising, but it does, however, come with the price of violating users' privacy (Boerman et al., 2017). Users mostly have trouble avoiding OBA even though they perceive behavioral tracking and express concern over it (Ham, 2017). For this reason, OBA has received much attention from the regulatory side to create programs for informing users about protecting their privacy (Boerman et al., 2017). Not just that, but high advertising obtrusiveness can create distrust in the minds of the users, which means that regulators have to think of ways to produce stricter laws to control online tracking (Nill & Aalberts, 2014).

Users' Awareness of Being Targeted Online

In their study, McDonald & Cranor (2010) compiled a list of reasons for being for or against OBA, which they then presented to their participants for rating. The results show that 64 % of participants felt that the tracking of online behaviors was invasive, and 40 % agreed they would be more careful about their online behaviors if they knew advertisers were collecting data. Their study also found that many users make buying decisions based on the ads they receive, even though they are mostly unaware of it. They also detail that 59 % of respondents thought it was not worth paying extra to avoid targeted ads, and only 15 % reported that they would stop using any site that applies behavioral advertising.

Smit et al. (2014) indicate that users are very concerned about their privacy, especially about the misuse of personal information. They also reason that OBA is most often perceived negatively, with the greatest animosity demonstrated toward privacy violations. Other research supports that most users do not take any measures to protect themselves, such as reading the privacy policies (Priyanka, 2020). As the most often reported coping behavior

against targeting practices, users mostly choose plain acceptance of online cookies and privacy policies rather than taking active caution and measures against it (Smit et al., 2014).

Nevertheless, as many users do not want personalized advertising because of privacy concerns, many still perceive its benefit and agree with relevant advertising (McDonald & Cranor, 2010). For example, Boateng & Okoe (2015) suggest that the respondents usually have a positive attitude toward social media advertising and consider it a good, essential communication channel to receive product information. However, users may react to social media ads more negatively if they believe that the ads are irrelevant, incompatible with the content they prefer to see or interrupt users' usual social media usage (Zhang & Mao, 2016). The level of users' awareness also depends on the type of message they are presented with, with users having a more negative perception of the advertised product if they observe that the ads they receive are manipulative, targeted, or obtrusive (Goldfarb & Tucker, 2011). It is also interesting to note that most users still prefer to see free online content because they are not willing to pay fees to avoid online personalized advertisement (Smit et al., 2014).

Frequency Of Social Media Usage

Online user behavior, which can include any user information, from websites the users have visited to exact search terms, can effectively be tracked to determine the needs of the tailor audience (Barbu, 2014; Li & Nill, 2020). Generally, Allahverdi (2022) reports that around 65 % of university students spend at least three hours per day online, with Cha (2010) stating that the greatest users' motives for social media usage are entertainment, boredom relief, interpersonal utility, escape, and convenience motives, all being correlated with both the online frequency of visiting and the amount of online usage. Interestingly, even though Smit et al. (2014) found that most respondents' Internet usage was very regular, only 12 % of the users answered sentences about OBA correctly. Moreover, Ha et al. (2014) claim that users' usage intention is heavily influenced by users' informativeness. When discussing users'

ad observance, Alkis & Kose (2022) assert that the frequency of social media usage impacts the user's willingness to engage with a social media ad, with those spending more time on social media having 35 % greater odds of buying through social media. As not many studies focus on this part of OBA and the literature connecting social media usage frequency and users' online awareness is scarce, this study postulates the following hypothesis:

H1a The more the users spend time on social media, the more aware they are of being targeted online.

Age

Previous research found that younger age groups tend to spend more time on social media and have larger networks (Kezer et al., 2016). Turow et al. (2009) report that younger American adults are less likely to say *no* to targeted advertising, but 55 % of 18–24-year-olds agreed that they do not want it. Research also shows that younger users are the ones with lower levels of online privacy knowledge (Hoofnagle et al., 2010). Moreover, Alkis & Kose (2022) affirm that, compared to users aged 35–44, users aged 25–34 are 21 % *more* likely, and users aged 65–74 are 13% *less* likely to buy products through social media ads. Hence, Zarouali et al. (2020) claim that adolescents until age 20 are not aware enough of how their data is being collected and used for personalized advertising, proving that they are not as well-informed to make consumer decisions and privacy actions. For them, maintaining general social media usage for connecting and socializing has greater importance than social media advertising, as they are seen to be the ones being more indifferent toward it (Childers & Boatwright, 2021). This study is then interested in the following hypotheses:

H2a The younger the users are, the less aware they are of being targeted online.

H3a The more the younger users spend time on social media, the less aware they are of being targeted online.

Gender

Smit et al. (2014) found that the highly educated male with a slightly higher income group is less concerned about their privacy but more educated about OBA and cookies. However, they also show less privacy-protective behaviors and are less inclined to protect their privacy (Hoy & Milne, 2010; Smit et al., 2014). Arguably, according to previous research, women care more about their privacy and read more privacy policies, than men (Prince et al., 2022; Steinfeld, 2016). Likewise, Hoy & Milne (2010) indicate that young male adults are unconcerned about their privacy and more favorable to personalized advertising than women. They are also the ones, contrary to young women, who do not believe as much that it is important to be as knowledgeable about online privacy and how and for which purposes online data is used (Hoy & Milne, 2010). Hence, this study assumes the following hypotheses:

H4a Male users are less aware of being targeted online than female.

H5b Younger male users are less aware of being targeted online.

Research also exhibits that women spend more time on social networking sites and mainly use it for socializing (Cha, 2010). They are also the ones that are reported to be around 33 % more likely to buy products through social media advertisements than men (Alkis & Kose, 2022). Even though research shows that women are more willing to purchase online, studies indicate that they can remember online advertisements more clearly, and they perceive privacy risks better than men (Garbarino & Strahilevitz, 2004; Okazaki, 2007). Previous research also indicates that older women express more concern about their privacy, and for this reason, take more privacy-protective measures (Smit et al., 2014). Correspondingly, Zarouali et al. (2020) claim that a person's awareness of targeted advertising only rises with

age, with younger people not being as aware. For these reasons, the study poses the following hypotheses:

> **H6a** The more time female users spend on social media, the more aware they are of being targeted online.

> **H7a** The more time older female users spend on social media, the more they are aware of being targeted online.

Users' Negative Emotions Over Being Targeted Online

Most users tend to express strong negative feelings about the misuse of their data online and privacy violations (Smit et al., 2014). Because of the tracking, they convey negative feelings over their privacy, such as concern, powerlessness, and distrust (Boerman & Smit, 2023; Smit et al., 2014). Likewise, in McDonald & Cranor's (2010) study, more than 50 % of respondents disagreed that they do not care about the data that advertisers can collect about them, such as search terms or visited websites, meaning that they *are* concerned about how their data is handled. Chen et al. (2023) report that users express high feelings of vulnerability over their privacy, which intensifies their dislike towards the platform and its advertisements.

Studies find that users are less willing to disclose information when they perceive privacy risks (Ortiz et al., 2018). Ham (2017) claims that the more aware the users are of the privacy risks of OBA, the greater the privacy concern they will express and that the greater the privacy concern the users have, the more they will want to avoid ads. Smit et al. (2014) support that the more the users worry about their online privacy, the more they try to protect it, with privacy concern being the strongest predictor of coping with OBA. Not just that, but users' privacy concerns can negatively affect their attitudes and social media usage intentions (Ortiz et al., 2018). Research also shows that if users' online privacy self-efficacy, or the

assurance that they can protect their privacy, is high, so are their privacy concerns (Ham, 2017).

Hence, users increasingly distrust companies and platforms for mistreating their online data (Boerman & Smit, 2023). They express feelings of concern and powerlessness over handling personal data but are primarily not acting against it (Boerman & Smit, 2023; Chen et al., 2023). Barth et al. (2019) indicate that users usually show a *privacy paradox*, as they call it, because the concerns that they usually self-report about their online privacy contradict their sometimes-careless online behaviors. Factors such as functionality or avoiding paying for a product online are more important than privacy concerns for users. Conversely, they also react more negatively if they feel that the ads they see are not well-targeted to them specifically (Baek & Morimoto, 2012).

Frequency Of Social Media Usage

Studies find that increased social media usage also increases users' negative feelings, such as anxiety or depression, e.g., especially among adolescents and younger adults (Allahverdi, 2022; Brailovskaia et al., 2020). Aguirre et al. (2015) state that, after exposing users to more online personalization, those users who were unaware of data collection, expressed more feelings of vulnerability because they felt that the advertising content they saw was too strongly personalized. They also report that vulnerability feelings increase if the users perceive the company as unreliable or feel that their data is being collected without their knowledge. Regarding users' feelings over online activity, Hunter & Taylor (2019) argue that users spend less time on social media depending on their preference for seclusion and reserve. Conversely, Cha (2010) found that online privacy concerns reduced the frequency of using social networking sites. They claim that users try to avoid online places where their privacy feels threatened, which is why the level of their concern depends on the level of their online usage frequency. Furthermore, research shows that the more the users want to spend time on

social media, the more they express feelings of anonymity (Hunter & Taylor, 2019). Studies also suggest that users tend to disclose less information if their privacy concerns are higher (Chung et al., 2021; Ortiz et al., 2018). This study explores the following hypothesis:

H1b The more the users spend time on social media, the more negative feelings they express about being targeted online.

Age

Findings from Smit et al. (2014) suggest that the group that is highly concerned about their privacy involved older respondents, who showed more worry and distress about OBA, with the younger respondents not being worried or feeling negative. Brodsky et al. (2021), however, report that young adults of Generation Z, born from 1995 to 2012 (Pichler et al., 2021), express negative feelings about Internet usage. Nevertheless, Zarouali et al. (2020) claims that adolescents do, however, show concern about collecting and using their personal data on social media and, therefore, perceive advertisers as immediate privacy concerns. Still, as much as they display concern about advertisers' data collection and usage, they are usually careless about online protective behaviors, with privacy concerns not always resulting in privacy-protecting measures (Zarouali et al., 2020). Van Der Goot et al. (2018) claim that younger users browse social media more often than other generations and that they feel more positive about online advertising. This might be due to the fact that younger generations might not even realize advertisers are targeting them because they mostly use social media for connecting (Saura et al., 2021). Ultimately, Cha (2010) claims that the younger the users are, the more they spend time online and the fewer privacy concerns they express. Therefore, this study postulates the following hypotheses:

H2b The younger the users are, the fewer negative feelings about being targeted online they express.

H3b The more time younger users spend on social media, the fewer negative feelings they express about being targeted online.

Gender

Hunter & Taylor (2019) explain that there are gender differences in preferences for privacy and social media usage, with intimacy, seclusion, and reserve forecasting social media usage in males and not neighboring and anonymity predicting social media usage in women. Previous studies suggest that men are generally seen as less concerned, caring, or worried over their privacy (Hoy & Milne, 2010; Prince et al., 2022; Smit et al., 2014; Dobber et al., 2019.) This group is not the only one with those characteristics. Moreover, Dobber et al. (2019) asserts that younger people are the group that is the least concerned about their privacy online. They also avoid mobile advertising less than other generations and express more positive attitudes toward social media and website advertising (Van Der Goot et al., 2018). Hence, the study poses the following hypotheses:

H4b Male users express fewer negative feelings about being targeted online than females.

H5b Younger male users express fewer negative feelings about being targeted online.

Even though women are found to spend more time online than men (Cha, 2010), they are more prone to showing privacy concerns, rejecting OBA, and being more likely to take online self-protective measures (Hoy & Milne, 2010). Tifferet (2019) affirmed that women tend to have higher privacy concerns, anxiety, and that they portray more privacy-protective behaviors, possibly due to their higher risk perception that leads to greater caution behaviors. Moreover, according to research, older generations express greater distrust and skepticism for social media advertising and are less trusting of its contents (Childers & Boatwright, 2021). Smit et al. (2014) support that the group highly concerned for their privacy consists of older

female users with lower income and lesser educational levels, who also take the most privacy-protecting behaviors. Consequently, this study postulates the following hypotheses:

H6b The more time female users spend on social media, the more negative feelings they express about being targeted online.

H7b The more time older female users spend on social media, the more negative feelings they express about being targeted online.

Methodology

Research Design

In order to explore the relations between the independent variables, *the frequency of social media usage*, *age*, and *gender*, on the two dependent variables, i.e., *users' awareness* and *users' negative feelings over being targeted online*, and to consequently answer the study's research question, an online survey was conducted. All respondents were subject to the same treatment by answering all questions, just in a random order of item appearance, which is how this study used the within-subject design and a quantitative research approach. The random order was done so that the question order effect could be avoided, and primacy and recency of question order would be attained, so that all respondents answer the questions equally without some questions being subject to unwanted effects due to the survey interface.

Participants

The sample consisted of 230 participants with 194 valid cases after removing the ones not fitting into the age group of Gen Z (i.e., 18-28 years), not having presented consistent data or dropping out. The Gen Z sample was chosen both out of convenience and because it brings more novelty to the current research. Of the respondents, 58 % identified themselves as female and 42 % as male, with the total age mean being 23 years ($M = 23.45$ years, $SD = 2.94$). The respondents were currently studying in an equal percentage for a Bachelor's (47 %) and a Master's degree (47 %), with the smallest number of participants marked that they were studying for a Doctoral degree (6 %).

When asked about their social media habits, the biggest number of respondents reported spending 4-6 hours and 1-3 hours (both 44 %) on social media. Only a small number of participants reported spending less than one hour on social media (5 %), 7-9 hours (4 %), and 10 and more hours on social media (3 %). A majority of respondents reported having 7-9 social media accounts (41 %), followed by 4-6 accounts (39 %), and 1-3 accounts (17 %). The

smallest number of respondents had 10 and more social media accounts (4 %). Of the accounts, they most often daily used Instagram, YouTube, Facebook, WhatsApp, and TikTok. As a reason for using social media, most respondents opted out for entertainment, communication, information, and a beat of boredom.

Procedure

An online survey, lasting 5 -7 minutes, was made in *SoSci Survey* and was run for two weeks (from the 19th of April to the 3rd of May, 2023). The survey sharing platform was used because the survey was predominately focused on Austrian students and *SoSci Survey* is a survey tool most often used German-speaking areas (*SoSci Survey*, n.d.). It was shared through various social media channels, groups and stories, such as Facebook, WhatsApp, Reddit, and Instagram and distributed via the on-site QR codes that the students could scan at the university buildings in Vienna. The survey collected data about the respondents completely anonymously. The important criteria for a possibility to be included in the study was that the respondents were students in the age group of 18-28 and that they used social media at least for one hour per day. The participants were all offered the same treatment, with no manipulation or special stimulus.

The questionnaire only began after the respondents gave their informed consent about participating in the survey and were informed how their data was to be treated. Before starting the survey, a small box was made to explain to the respondents the concepts of "behavioral advertising" and "behavioral data" for any respondents who were unaware of the concepts. After that, they needed to rate the statements and answer questions about their usual social media usage. All the statements inside both scales were shuffled, and the order of appearance of both pages was randomized. Both sets of statements first asked the respondents to: "Please think about your usual online advertising experience and rate the following statements depending on how much they refer to you".

Measures

To test the first dependent variable, *users' awareness of being targeted online*, statements from McDonald & Cranor (2010) were employed and tested through a 7-point Likert scale where 1 was "I strongly disagree" and 7 "I strongly agree", as was also used in the original paper. The selected statements were in the original study used to test the reasons to accept or reject tailored advertising. Their study first made qualitative interviews from which they have compiled the most often responses regarding OBA. After that, the respondents were asked to rate their agreement on those statements. The statements included a focus on the functionality of OBA, ignoring the ads under different circumstances and seeing relevance in tailored advertising.

In the current study, nine statements out of eleven were taken to measure the awareness of being targeted online, because they considered all the perception of targeting concepts in depth. All the statements were by wording unedited, as they matched what this study was trying to explore and there was no need seen in extending them. Table 1 shows all the means, standard deviations, and Cronbach's Alpha's for all the statements. Out of the statements, all were reported having a Cronbach's Alpha between $\alpha = 0.60$ and $\alpha = 0.70$. For awareness, most statements obtained the mean between $M \approx 2.40$ and $M \approx 4.00$. The statements rated the highest was the "Someone keeping track of my activities online is invasive.", ($M = 5.06$, $SD = 1.52$). Moreover, the lowest scoring statement was "I want the benefits of relevant advertising." ($M = 2.47$, $SD = 1.80$).

The second dependent variable, *users' negative feelings over online targeting*, was tested through eight statements, six from Ham (2017) and two from McDonald & Cranor (2010). Ham's (2017) statements were used in the study under the title "privacy concern" yet were testing a myriad of emotions users feel when they perceive they are being targeted, such as concern, bother, discomfort, fear or worry over misuse of data, tracking without

permission, and sharing of personal data. These statements were also measured with the same Likert scale where 1 was "I strongly disagree" and 7 "I strongly agree". To effectively measure a slightly broader range of feelings, two statements out of eleven from McDonald & Cranor's (2017) concerning the "I do not care if advertisers collect data", one regarding search terms, and the other users' visited websites, were taken and put together in a scale together with the statements of Ham (2017). This was done mainly because of also trying to measure the indifference aspect in the users' negative feelings variable, and because that way an almost equal ratio of sentences was obtained with eight statements measuring negative feelings and nine for awareness of being targeted online.

Table 1

Means, Standard Deviations, and Cronbach's Alphas for All Statements

Statement	M	SD	Cronbach's Alpha
Users' awareness of being targeted online (Cronbach's a = .519)			
Someone keeping track of my activities online is invasive.	5.06	1.52	.63
Behavioral targeting works poorly and I get ads that are not relevant to me, even when they are supposed to be.	3.99	1.94	.74
I would watch what I do online more carefully if I knew advertisers were collecting data.	3.98	1.67	.64
I ignore ads, so there is no benefit to me if ads are targeted to my interests.	3.89	1.94	.74
I ignore ads, so I do not care if ads are targeted to my interests or if ads are random.	3.85	1.93	.75
I ignore ads, so there is no harm to me if ads are targeted to my interests.	3.80	1.97	.75
I want the benefits of relevant advertising.	2.47	1.80	.70
I would stop using any site that uses behavioral advertising.	2.79	1.84	.63
I am protected by law against advertisers collecting data about me.	3.12	1.76	.71
Users' negative feelings over being targeted online (Cronbach's a = .946)			
I feel uncomfortable when my online behaviors are tracked without permission.	5.35	1.73	.64
I am concerned about the misuse of my online behaviors.	4.39	1.89	.62
It bothers me to receive too much advertising material through tracking of my online behaviors.	5.77	1.41	.65
I fear that my online behavior information may not be safe while stored.	4.28	1.92	.61
I believe that my online behavioral data is often misused.	4.19	1.75	.63
I think companies share my online behavioral data without permission.	4.21	1.98	.63
I do not care if advertisers collect data about my search terms.	4.78	2.07	.64
I do not care if advertisers collect data about which websites I visit.	4.81	1.98	.64

Note: All items are rated from 1, "I strongly disagree" to 7, "I strongly agree".

As was the case with the awareness' statements, no statements regarding the feelings' variable were by wording edited because they measured OBA how it was also imagined in the present study. Overall, the users' negative feelings statements scored higher Cronbach's Alpha ($\alpha = .946$), compared to the users' awareness statements ($\alpha = .519$). They all scored a mean somewhere between $M \approx 4.00$ and $M \approx 5.80$. The highest rated statements were: "It bothers me to receive too much advertising material through tracking of my online behaviors." ($M = 5.77$, $SD = 1.41$), followed closely by statement "I feel uncomfortable when my online behaviors are tracked without permission." ($M = 5.35$, $SD = 1.73$). As the last two statements with the "I do not care" feeling were inverted, their score mean score was around $M \approx 4.80$ with the 7 then being "I strongly disagree".

The independent variable of *frequency of social media usage* was tested by asking the respondents to answer how much they spend time there, with options being *less than 1 hour daily*, *1-3 hours*, *4-6 hours*, *7-9 hours*, and *10 and more hours* on social media daily. *Age* as independent variable was self-reported but is in the study limited to respondents' age of 18-28 because of the chosen Gen Z sample. Generation Z participants are the ones born in the years between 1995 and 2012 (Pichler et al., 2021), but this study decided to only include young adults that are mature and above the age of 18, which then created a very convenient 10-year sample that was studied under the term *young users*. For the independent variable of *gender*, respondents could choose between *female*, *male*, *other* and *prefer not to say* options, but the latter two were excluded from the study because of a too minor number of cases. Other questions were also tested to understanding respondents' online activity habits, such as *the number of social media accounts* (with the exact wording as with the frequency of usage, e.g., 1-3 accounts, etc.), *the most frequently used social media*, and *users' reason for social media usage*, but these answers were not part of the main analysis. See the Appendix section for a full list of questions.

Data Analysis

The data analysis was done in *SPSS* after obtaining data from *SoSci Survey*. To begin the analysis of data, the dataset was first adapted to show only those cases that were required, i.e., being in the right age groups, with no missing data, and with no inconsistent or unmatching data. As for the dependent variable, inside the negative emotions, the two statements, which were adopted from McDonald & Cranor (2010) concerning the "I do not care" part, were inversed to show the actual data, as those were the only statements containing the wording "do not". Also, the independent variables were centered to fit well in regression models.

What was first run were the descriptive statistics of the independent and dependent variables. Then, the data analysis consisted of calculating linear regression models to predict the influence of three independent variables on the two dependent variables. This type of analysis was used to investigate the effects of the means of the independent variables on each of the dependent variables. First, three simple regression models were run to evaluate individual effects of each of the independent variable on the dependent variables. Then, interaction effects were tested by employing each of the independent variables inside a moderation term and analyzing their influence on each dependent variable. Lastly, the models were tested with two moderators inside an interaction regression analysis to test the possible impact on the dependent variables. The analysis featured results about the variables' beta's, significance values and adjusted R^2.

<center>**Results**</center>

The research model was tested using regression analysis to predict the influence of the independent variables of frequency of social media usage, age, and gender, on the dependent variables of users' awareness and negative feelings over being targeted online, to be able to answer the hypotheses and the main research question. Most of the hypotheses in both models were rejected, with only two hypotheses regarding the frequency of social media usage and users' age being exemptions by being supported. All results are reported in Table 2.

Users' Awareness of Being Targeted Online

Several simple and multiple linear regressions were run to determine the possible effects of three independent variables on the awareness of being targeted online. A statistically significant effect was found between the frequency of social media usage and the users' awareness of being targeted online ($\beta = .412$, $p < .001$), with the adjusted R^2 explaining 17 % of the variance in the dependent variable ($R^2 = .170$, $F (1, 192) = 39.30$, $p < .001$), hence H1a was supported. There was, however, no significant effect found of users' age on the users' awareness of being targeted ($\beta = .073$, $p = .314$), nor gender ($\beta = .088$, $p = .220$), marking H2a and H4a as rejected.

By implementing interaction terms and interaction analyses inside the research models, it was possible to test if the independent variables had moderating effects on the dependent variable. There was, however, no significant interaction found in this regard. The first interaction effect of age and the frequency of social media usage on the awareness of users proved to be nonsignificant ($\beta = -.713$, $p = .233$); hence H3a was rejected. Also found nonsignificant was the interaction effect of gender moderating the effect of users' age on users' awareness ($\beta = -.065$, $p = .369$), which is why H5a was rejected. Next, the interaction effect of gender on the frequency of social media and the users' awareness was nonsignificant ($\beta = -.287$, $p = .381$); thus, H6a was also rejected. Lastly, adding gender and age as

moderators inside the whole model also proved nonsignificant, as neither gender nor age had a moderating effect on the frequency of social media usage and awareness of being targeted online (with age being: β = -.679, p = .257; and gender: β = -.284, p = .389), so H7a had to be rejected.

Users' Negative Feelings Over Being Targeted Online

As with the awareness, the same statistical tests were used for the other dependent variable, users' negative feelings over being targeted online. Simple linear regressions provided interesting findings. The frequency of social media usage on the dependent variable was found to be significant, (β = -.352, p < .001), but negative, moving in the wrong direction than hypothesized and resulting in a lower social media usage frequency, and greater concern, which is why H1b was rejected. The effect of users' age on the dependent variable was significant (β = .149, p = .038), showing that the older the people are, the more negative feelings they express, with the adjusted R^2 explaining only 1,7 % of the variance in the dependent variable (R^2 = .022, F (1, 192) = 4.36, p = .038), meaning H2b was supported. However, no significant effect was found of gender on negative feelings about being targeted online (β = .132, p = .066); therefore, H4b was rejected.

Interaction effects of independent variables on users' negative feelings were tested, with none being significant. Because the interaction effect of the age of users on the frequency of social media usage on users' negative feelings was nonsignificant (β = -.342, p = .574), H3b was rejected. The interaction effect of gender of users on users' age and the users' negative feelings about targeting online was not significant (β = -.036, p = .618), and H5b was rejected. The interaction effect was also tested for gender moderating the relation of the frequency of social media on negative feelings, but no significant effect was found (β = .474, p = .158). Hence, H6b was rejected. As with the users' awareness, gender and age did not

moderate the relation of the frequency of social media usage on negative feelings (age: β = -.211, p = .728; gender: β = .535, p = .110). Therefore, H7b was rejected.

Table 2

Explaining the dependent variables with regression analysis

Predictors	Users' awareness of being targeted online	Users' negative feelings over being targeted online
	b (SE)	*b (SE)*
Independent variables		
Age	.073 (.314)	.149* (.038)
Frequency of social media usage	.412***(<.001)	-.352 ***(<.001)
Gender (1 = male)	.088 (.220)	.132 (.066)
Interaction effects		
Age (W) x Frequency of social media usage	-713 (.233)	-.342 (.574)
Gender (W) x Age	-.065 (.369)	-.036 (.618)
Gender (W) x Frequency of social media usage	-.287 (.381)	.474 (.158)
Age (W) x Gender x Frequency of social media usage	-.679 (.257)	-.211 (.728)
Age x Gender (W) x Frequency of social media usage	-.284 (.389)	.535 (.110)

Note. Number of cases N = 194; * p < .05; ** p < .01; *** p < .001.

Discussion

OBA is used by advertisers to collect users' data to be able to offer them relevant, highly specific, and personalized products and services, but because of the data collection, it sparks great privacy concerns (Boerman et al., 2017; Nill & Aalberts, 2014). Many users express concern over information misuse, feel that OBA is invasive, and have trouble avoiding it (Ham, 2017; McDonald & Cranor, 2010; Smit et al., 2014), but as much as they are worried, research shows that users do not take enough proactive privacy protective measures against online targeting (Smit et al., 2014; Zarouali et al., 2020). The present study analyzed the effects that frequency of social media usage, age, and gender might have on users' awareness and negative feelings about being targeted online, by employing an online survey in *SoSci Survey* shared among students studying in Austria at different universities and departments. The primary aim of the study was to gain more insight into the users' online targeting perception to be able to differentiate the factors predicting users' awareness and negative emotions over OBA.

It was shown in this study that users rated the emotions scale more towards disagreement, and the users' awareness scale more with neutral expressions. This can be due to the fact that users usually express great privacy concerns, but are not knowledgeable enough about OBA or take almost any active measures against it (Smit et al., 2014). It can also be because some users do not perceive that they are being targeted online, but focus more on the communication side of social media (Saura et al., 2021). Regarding the research questions, it is clear that no gender or age differences were found in how aware users are of being targeted online, with the only exception being that the more the users spend time online, the higher awareness they have, however that was not true for users' negative feelings. As for the different types of users, this study did not find any sort of indication in that direction, other than those concerning higher frequency of social media usage and lower age.

This study also found that, in general, somewhat lower ratings in all statements than that in the original study by McDonald & Cranor (2010) were reported. This can also be due to the Gen Z sample, which was more unanimous than with the wider generation sample as it was in the original study. The study also observed that students were split as to if OBA was invasive, they showed mostly indecisiveness about the harms and benefits of OBA, and they expressed uncertainty about being more careful online to protect themselves. This finding contradicts that of McDonald & Cranor (2010), who found that almost two thirds of participants agreed that OBA is invasive, as well as that that they would be more careful online, which also received higher ratings in their study. As is found by McDonald & Cranor (2010), users mostly did not want relevant advertisements and expressed slight disagreement towards stopping using any site using OBA, however in their study users' disagreement was reported even higher.

Moreover, in Ham's (2017) study, users mostly expressed bother and fear over data advertisements tailored to their personal data and tracking their online activity without permission. However, this study found that most users felt discomfort and bother feelings over the tracking and data misuse. They also expressed care for advertisers collecting their data online and expressed fear and concern over how it is being handled. When asked if they think companies share their data without permission, most respondents in Ham's (2017) study reported higher agreement, while in this study this result was lower. As was in the original study, the lowest rated statement considered the belief that online data was misused. As for the statements regarding the indifference of data collection aspects, taken from McDonald & Cranor (2010), both obtained similar results with users being plainly unsure.

This study's next finding concerns users' awareness, where it was interesting to see that only the frequency of social media usage had an effect on the users' awareness of being targeted online, and no gender or age effects were found. Although some studies show that

even though users regularly use online services, they are not as knowledgeable about OBA (Smit et al., 2014), this study provided different results, showing that, indeed, the more the users spent time online, the more they were aware of being targeted. This could be also because of the Gen Z sample, which is a generation spending more time online than other generations (Childers & Boatwright, 2021). Debatably, the frequency of social media usage did not play a significant role in negative feelings users expressed, showing that the more the users spent time online, the less they were concerned, but they were then visibly more knowledgeable. A similar finding was reasoned by Smit et al. (2014), who also reported lower knowledge about OBA, but high concern.

It was hypothesized that younger users, especially the ones spending more time on social media, will be less aware of targeting online and that the users' awareness will only rise with age (Alkis & Kose, 2022; Childers & Boatwright, 2021; Zarouali et al., 2020). What is more, although previous research found that younger users reported lower online privacy knowledge and not being as well-informed (Hoofnagle et al., 2010; Zarouali et al., 2020), this study did not find such an effect. In the present study, all ages expressed equal levels of awareness, which might be due to the fact that only a 10-year sample was taken for the age variable. This can also be because of the focus on the educated sample who are all students at universities, with no educational differences other than the diploma levels. Moreover, age was found to be a key predictor of negative feelings users express, with older people expressing more concern and, ultimately, younger people expressing less concern, which goes in line with other previous studies (Cha, 2010; Smit et al., 2014). In reality, this may also be due to the fact that, as Childers & Boatwright (2021) claim, older generations are the ones that usually express greater distrust and suspicion toward social media advertising.

As for gender, research shows that male users are less involved in the privacy-protective processes and not as negative towards OBA (Hoy & Milne, 2010; Prince et al.,

2022). Studies also indicate that older female users are more knowledgeable about their privacy (Smit et al., 2014) and that they usually spend more time online (Cha, 2010). There was, again, no such effect found of gender making a difference on users' awareness, owing to, perhaps, the smaller sample observed, and no other generations being included in the sample. What is more, other studies found that women were more concerned about their privacies and expressed more negative feelings (Hoy & Milne, 2010; Smit et al., 2014), but this study did not find this to be the case, as both genders expressed similar concerns. It is also interesting to note that, as many studies noticed generational and gender differences when reporting about awareness and negative feelings, this research paper mostly did not.

This study does not come without limitations. First, using only a sample of university students can prove to be too small a sample, which could greatly change the possible results. Students aged 18 to 28 were chosen as a convenient 10-year sample, with a large enough number of people falling into that group. Because of it, the survey must be shared online through private social media accounts, which is time-consuming and could be made more accessible with the presence of funding to reach a wider audience. Not just that, but study results proved to be quite uncontested and unanimous, with many perceived effects seen in other studies not happening in the present, such as gender or age playing a role in the ratings. Second, the present study does not focus on the department or faculty differences as it is more important for the survey to collect the data of all the students rather than differentiate them by fields, even though these variables might pose interesting findings. On top of that, the focus was also not put on the educational aspects of the participants, which might have offered innovative results regarding the connection between educational level and being targeted online. Future studies could also compare the level of education with the level of OBA education. They should also perhaps focus on national, international, or global settings and

comparisons with all ages included to be able to observe greater differences between the sample.

Third, the statements for measuring the dependent variables were adapted from Ham (2017) and McDonald & Cranor (2010). Still, this choice can be altered, and more precise measures could be employed, possibly measuring all of the feelings from the negative feelings spectrum better or differentiating more between awareness and knowledge in the statements. Fourth, the method of the study was selected as quantitative; however, this can be a great limitation as more in-depth answers could perhaps provide more answers about the nature of the users' awareness and negative feelings about being targeted online. A broader, more investigative method might prove better to offer an understanding of the feelings and awareness of OBA. Another limitation is seen in the survey design because it was not offering an experimental setting, and many users self-reported answers, which might not have shown their real knowledge or feelings, but the ones that they would like the others to perceive they have. Because of this design, most users *claim* to be of the reported opinions, however, their actual opinions can be very much different in reality. Future studies should include a sort of manipulation or experiment to really perceive users' actual feelings and thoughts.

To conclude, OBA is a topic that is very relevant nowadays and one that should be given more attention from the academic world and general public. Having an unsafe online environment with highly personalized advertisement is not everyone's wish, and when asked about it, most users are more against it, as they feel their data is misused. As seen, most younger users are uncertain about information regarding OBA and targeting practices, but they still express concern and negative emotions over it. This study contributes to the consistent literature because it is visible that they are equally aware of OBA, even though limited, but that their concern is higher than their awareness. Not just that, but the study shows that the older the users are, the more negative feelings over online privacy they

express, which is something that should be brought to society's attention to produce better educational options for younger people's online literacy. What is more, no study before, to the best of the researcher's knowledge, included the frequency of social media usage compared to OBA, which actually proved to be a very significant finding with regard to awareness. Actions have to be taken to regulate the advertising policies to offer clear guidelines on how to protect online privacy, and proactive privacy-protective behaviors have to be instructed from a young age so that no citizen is wrongly informed about the way their privacy is being used.

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Appendix

List of Survey Questions

Awareness

Someone keeping track of my activities online is invasive.

Behavioral targeting works poorly and I get ads that are not relevant to me, even when they are supposed to be.

I would watch what I do online more carefully if I knew advertisers were collecting data.

I ignore ads, so there is no benefit to me if ads are targeted to my interests.

I ignore ads, so I do not care if ads are targeted to my interests or if ads are random.

I ignore ads, so there is no harm to me if ads are targeted to my interests.

I want the benefits of relevant advertising.

I would stop using any site that uses behavioral advertising.

I am protected by law against advertisers collecting data about me.

Negative feelings

I feel uncomfortable when my online behaviors are tracked without permission.

I am concerned about the misuse of my online behaviors.

It bothers me to receive too much advertising material through tracking of my online behaviors.

I fear that my online behavior information may not be safe while stored.

I believe that my online behavioral data is often misused.

I think companies share my online behavioral data without permission.

I do not care if advertisers collect data about my search terms.

I do not care if advertisers collect data about which websites I visit.

Online activity

What is your approximate social media usage per day (in hours)?

- ☐ Less than 1 hour

- ☐ 1-3 hours

- ☐ 4-6 hours

- ☐ 7-9 hours

- ☐ 10 and more hours

How many social media accounts do you approximately have?

- ☐ 1-3

- ☐ 4-6

- ☐ 7-9

- ☐ 10 and more

- ☐ I do not have any social media accounts.

What are the main reasons for your social media usage?

- ☐ Beat of boredom

- ☐ Communication

- ☐ Entertainment

- ☐ Information

☐   Inspiration

☐   Self-expression

☐   Work

Which social media accounts do you use daily?

☐   Facebook

☐   Instagram

☐   LinkedIn

☐   Pinterest

☐   Reddit

☐   Snapchat

☐   TikTok

☐   Tumblr

☐   Twitter

☐   WhatsApp

☐   YouTube

☐   Other

Socio-demographic characteristics

With which gender do you identify?

☐   Male

☐   Female

☐   Other

☐   Prefer not to say.

How old are you?

I am __ years old.

What is the highest educational level you have obtained so far?

- ☐ High school diploma (Matura)

- ☐ Bachelor's degree

- ☐ Master's degree

- ☐ Doctoral degree

- ☐ I do not study.

Abstract

Online behavioral advertising (OBA) is an advertising technique used to present users with the most relevant advertisement by collecting, monitoring, and tracking detailed data about their online activities and behaviors. This data, combined with sociodemographic and geographic information, creates precise, specific user profiles and, in turn, influences the personalized ads users receive. Users mostly have trouble avoiding OBA even though they perceive behavioral tracking and express their concerns, demonstrate privacy violations, and strong negative feelings about online data misuse. The present study used an online questionnaire in *SoSci Survey* among Austrian Gen Z university students ($N = 194$) to explore how the frequency of social media usage, age, and gender relate to users' awareness and negative feelings about being targeted online, with the aim of exploring how aware and affected users are by online targeted advertising. The findings show that there are no differences in how aware and affected by online targeting different genders and ages are, except with the younger users who express fewer negative feelings about the targeting practices. The present study also finds that the more time the users spend on social media, the more they are aware of being targeted online. Most users are more concerned than aware of being targeted online and mainly express feelings of discomfort and bother. This study contributes to the body of literature regarding OBA, online targeting and advertising, and online privacy.

Keywords: online behavioral advertising, users' awareness, users' negative feelings, privacy concerns

Zusammenfassung

Online Behavioral Advertising (OBA) ist eine Werbetechnik, mit der Nutzern die relevanteste Werbung präsentiert wird, indem detaillierte Daten über ihre Online-Aktivitäten und ihr Verhalten gesammelt, überwacht und verfolgt werden. Diese Daten, kombiniert mit soziodemografischen und geografischen Informationen, erstellen hochspezifische Nutzerprofile und beeinflussen wiederum die personalisierte Werbung, die die Nutzer erhalten. Den Nutzern fällt es meist schwer, OBA zu vermeiden, obwohl sie das Tracking wahrnehmen, und sie äußern ihre Bedenken, Verletzungen der Privatsphäre und starke negative Gefühle über den Missbrauch ihrer Daten im Internet. In der vorliegenden Studie wurde ein Online-Fragebogen im Rahmen von *SoSci Survey* unter österreichischen Gen Z-Studenten ($N = 194$) verwendet, um zu untersuchen, wie die Häufigkeit der Nutzung sozialer Medien, das Alter und das Geschlecht mit dem Bewusstsein und den negativen Gefühlen der Nutzer in Bezug auf gezielte Online-Werbung zusammenhängen, mit dem Ziel, herauszufinden, wie bewusst und betroffen die Nutzer von gezielter Online-Werbung sind. Die Ergebnisse zeigen, dass es keine Unterschiede im Bewusstsein und in der Betroffenheit von Online-Targeting zwischen den verschiedenen Geschlechtern und Altersgruppen gibt, außer bei den jüngeren Nutzern, die weniger negative Gefühle über die Targeting-Praktiken äußern. Die vorliegende Studie zeigt auch, dass je mehr Zeit die Nutzer in den sozialen Medien verbringen, desto mehr sind sie sich bewusst, dass sie online, dass zielgerichteter Werbung ausgesetzt sind. Die meisten Nutzer sind eher besorgt als sich der Tatsache bewusst, dass sie online gezielt angesprochen werden, und äußern hauptsächlich Gefühle des Unbehagens und der Beunruhigung. Diese Studie trägt zur Literatur über OBA, Online-Zielgruppenwerbung und -Werbung sowie Online-Datenschutz bei.

Schlüsselwörter: Online-Verhaltenswerbung, Bewusstsein der Nutzer, negative Gefühle der Nutzer, Datenschutzbedenken