Can personalization go beyond its effectiveness?

The effects of personalized online advertisements, privacy concerns and feelings of unfamiliarity on advertising effectiveness

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Master Thesis
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Master Business Communication and Digital Media

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January 30, 2017

Preface

After I graduated for my bachelor of communication at the Fontys Academy for Creative Industries, I decided to continue my study with a master Business Communication and Digital Media at Tilburg University. This master thesis concludes my study and is likewise the start of my career as digital marketer.

The opportunity to conduct research in cooperation with PauwR Digital Marketing perfectly fitted my ambition to learn more about online marketing. Besides, it gave me the possibility to conduct research into the subject that arouses my interest, namely the personalization of online media channels and the related privacy concerns of customers.

This master thesis would not have been possible without the help of others. First, I want to thank my supervisor of Tilburg University, Dr. Marjolijn Antheunis. Her guidance and feedback helped me a lot completing this thesis and I really enjoyed our thesis meetings. Moreover, I want to thank all my colleagues at PauwR Digital Marketing for educating me about the digital marketing field and provide me with a great work environment. Special thanks goes to my supervisors Pieter Voogt and Roel Derksen for their helpful advice according to the design and implementation of my research. Last, I would like to thank my family and friends for their help and support throughout my entire career at Tilburg University.

I hope you enjoy reading.

Silvie Scheepers

Abstract

A popular strategy to persuade customers is the personalization of online advertisements using personal data. However, personalization can go hand in hand with hazards like privacy concerns and feelings of unfamiliarity. The present study investigates how consumers respond to personalized display advertisement in terms of attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement. Furthermore, this study investigates, based on literature on privacy concerns and the uncanny valley of personalization, whether privacy concerns and feelings of unfamiliarity mediate their responses. Higher personalized advertisements were expected to increase privacy concerns and feelings of unfamiliarity, which in turn negatively affect the effectiveness of the advertisement. A between-subject experiment involving 194 participants was performed. Four conditions of display advertisements were designed with no, low, medium, and high levels of personalization. The study found that medium- as well as high-personalized advertisements increase privacy concerns and feelings of unfamiliarity. Medium personalized advertisements in turn positively affect the attitude towards the ad in contrary of high-personalized advertisements that negatively affect the attitude towards the ad. Thus, this study found evidence for the uncanny valley of personalization. The uncanny valley of personalization indicates that responses of customers to personalization become more positive as the personalization becomes more, until a moment it abruptly shifts to unfamiliar when the ad becomes too personal.

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Introduction

Nowadays, marketers in the Netherlands spend a significant part of their advertising budget on Internet advertising. In 2009 budgets for online advertising in the Netherlands amounted 815 million euro. In 2014 the budgets increased to 1.340 million euro and they will continue to grow in the future (Marketingfacts, 2014). This growth of online advertisements is partly due to the increase of display banners on webpages and social media platforms (Marketingfacts, 2015). Consequently, Internet users today are overwhelmed with advertising messages on the webpages and social media platforms they visit. Therefore, marketers try to attract the attention using different strategies to stand out from the growing competition.

An important aim of online advertisements is to acquire so-called click-through rates, a well-known measure for online advertising effectiveness (Drèze & Hussherr, 2003). A click-through rate is the percentage of the total number of ad exposures that provokes the surfer to actually click on the banner in response to the advertised message (Novak and Hoffman, 1996). However, there is a decrease in the number of clicks on the banners (Drèze & Hussherr, 2003), which can be explained by the following reason. Customers who are surfing online avoid these advertisements during their online activities also known as banner blindness (Drèze & Hussherr, 2003). However, despite that people click less on the online advertisements, they do have some important positive effects over a longer time period on traditional memory-based measures like brand awareness and brand attitude (Courbet, Fourquet-Courbet, Kazan, & Intartaglia, 2014; Drèze & Hussherr, 2003). Therefore, it is important for marketers to continue with developing advertising strategies to stand out from the growing competition of the online advertisement market.

One advertising strategy that recently became more popular is personalization of online advertisements using personal data (Aguirre, Mahr, Grewal, de Ruyter, & Wetzels, 2015), which is any information relating to an identified or identifiable individual (Cooper et al., 2013). Examples of personal data are personal identifying information, like name and address, but also an individual's purchase behaviour is personal data. These data are often collected from customers by the use of automated electronic data collection programs. Besides, users of social networking sites reveal a lot of their personal information on their social media profiles (Kazienko & Adamski, 2007). Marketers use these personal data to personalize the online advertisement messages by for example including a person's name in the advertising message with

the aim to make the message more persuasive (Maslowska, Smit, & van den Putte, 2011).

A previous study about social media has reported that personalization has important positive effects on brand engagement (Antheunis & van Noort, 2011). Yet, personalization might be a double-edged sword since customers have privacy concerns about how their personal data is collected and used (Graeff & Harmon, 2002). These privacy concerns could mediate the effect of personalization and therefore it is important to take customer's privacy concerns into account while investigating the effects of personalization. Some earlier studies have considered privacy concerns in examining the effect of personalization (Walrave, Poels, Antheunis, van den Broeck, & van Noort, 2016; van Doorn & Hoekstra, 2013; Graeff & Harmon, 2002; Phelps, D'Souza, & Nowak, 2001). However, these studies yielded inconsistent results. Furthermore, since personalization and privacy concerns recently have been much-debated topics some further research is expedient. Therefore, the first aim of this study is to examine the effect of personalization in online advertisements on the advertising effectiveness by taking privacy concerns into account as a mediating variable. The question arises whether personalized advertisements evoke more privacy concerns and therefore have a negative effect on advertising effectiveness or whether consumers claim to have privacy concerns but do not apply these concerns to their behaviour.

Another potential hazard of personalization occurs when the advertisements seem to know us better than we know ourselves with the risk of becoming unfamiliar to us, also known as the *uncanny valley of personalization* (Watson, 2014). The uncanny valley of personalization is entered when the data used in the online advertisement is too close to the customer and he or she does not feel familiar with it anymore, but feels a kind of awkwardness (Watson, 2014). One example of when a personalized advertisement enters the uncanny valley comes from the supermarket Target located in the USA. Target developed an algorithm that could determine whether women are pregnant based on the groceries they bought at the supermarket. If the algorithm classified a woman as pregnant, Target started to send personalized advertisements for baby items to the customer. However, these advertisements can be perceived as awkward since they are very personal. The women to whom they were targeted maybe did not even know that they were pregnant themselves (Hill, 2012).

Results from a qualitative study indicate that the uncanny valley effect occurs when consumers get a weird unfamiliar feeling when an ad is too personal (Wohn & Sarkar, 2014). Besides, some researchers have introduced the existence of an uncanny valley of personalization (Watson, 2014; Strong, 2014). However, little empirical research on the theory has been done. Therefore, the second aim is to examine whether there is support for the uncanny valley of personalization by investigating the effect of personalization in advertisements on advertising effectiveness by taken unfamiliarity into account as a mediating variable. The question is whether highly personalized advertisements evoke more feelings of unfamiliarity and therefore have a negative effect on advertising effectiveness.

In summation, the present study intends to provide two main contributions to our knowledge about personalization of online advertisements, privacy issues and the uncanny valley of personalization by means of an experiment. First, it will investigate the effect of personalized display advertisements on attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement. Second, this study will examine whether personalization can go beyond its effectiveness by taking privacy concerns and unfamiliarity as mediators into account.

Theoretical Background

Personalization and personalization tactics

Personalization is a customer-oriented marketing strategy that refers to designing the communication message in such way that it feels like it is specifically for 'you' (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008) with the aim to make the message more persuasive and meaningful (Maslowska, Smit, & van den Putte, 2011). This definition of personalization is close to those of Dijkstra (2008), who defines it as integrating recognizable aspects of an individual in the content information, like one typical feature (e.g. first name) or a set of features that in the concerned situation has a similar probability to refer to the individual. Personalization is one of three tailoring strategies, namely feedback, content matching and personalization (Hawkins et al., 2008). Tailoring strategies are strategies of which the created communication, like the communication messages, the sender of the communication and the communication channel is based on information about a given individual with the aim to enhance its relevance (Hawkins et al., 2008).

Marketers often implement this personalization strategy for communication messages, offline as well as online (Aguirre et al., 2015). In face-to-face communication, companies motivate their employees to adapt their behaviour toward each individual customer, such as calling the customer by name or adjusting the service to provide in the customers' needs. In web-based communication, for instance, companies use personal data for the personalization of search results in search engines, provide personalized recommendations in e-commerce or target advertisements based on previous online behaviour (Aguirre et al., 2015). The ability in online communication to use a customer's previous behaviour enables marketers to personalize messages more accurately, which has advantages for both parties. The advantage for customers is that they enjoy improved products and services and a better preference match and the advantage for marketers is that they can better serve their customers in their needs (Aguirre et al., 2015).

Hawkins et al. (2008) differentiate between three personalization tactics: identification, contextualization, and raising expectation of customization. The first tactic, identification, is incorporating an aspect of a person's personal information within the message, like the recipient's name, picture or birthday. Another tactic is contextualization, which is framing the message in a context that is meaningful for the recipient. For instance, referring to the recipient's role as a student or the recipient's

hometown. Thus, the difference between identification and contextualization is that identification incorporates aspects of a person in the content information while contextualization only frames the content information to the individual. For example, an identification message is "dear Sander, you get a 10% discount today" and a contextualization message is "people from Tilburg get a 10% discount today". The third personalization tactic is raising expectation of customization, which involves overt claims of customization in the messages, such as "the following message has been created especially for you" (Hawkins et al., 2008). However, this personalization tactic does not incorporate recognizable aspects of an individual in the content information (Dijkstra, 2008). These messages are designed to look like they are personalized for the recipient, although each recipient receives the same message. Therefore, customization is not considered to be personalization in the current research.

In conclusion, in the present study personalized messages are all messages that integrate recognizable aspects of an individual in the content information (Dijkstra, 2008). Therefore, the personalization tactics identification and contextualization are considered to be personalization in the current research.

Personal data collection

Since online personalized messages are based on previously collected customer data (Aguirre et al., 2015), marketers need to collect this data before they can implement personalization. Personal data can be gathered online in different ways. The first method is to ask website users to create online profiles by registration (Kazienko & Adamski, 2007). During the registration process users are asked to give some personal information, like name and e-mail address. Sometimes also questions about their preferences and interests have to be answered. Though, this registration process can discourage users to create the online profile, since it requires time and effort (Kazienko & Adamski, 2007). Yet, the creation of a profile is mostly necessary if a user wants to engage in social networking sites. Therefore, social networking sites accommodate as perfect personal information gathering tools. Especially, because on the social networking sites a lot of users keep on extending their profiles with personal information like hobbies, opinions, demographics and other preferences. For example, a user of the social networking site Facebook reveals his or her interests by

liking a particular (brand) page (Walrave et al., 2016). However, there is no certainty for marketers that the data that is given is correct (Kazienko & Adamski, 2007).

Another way to gather personal information of users is to collect it from web server logs (Kazienko & Adamski, 2007). Web server logs are records of activity on a computer which store and serve the content of your website. The advantage of this method is that users do not have to log in or register to use the website (Kazienko & Adamski, 2007). A contemporary alternative is the implementation of a script. A script is a piece of code that is implemented in a website and can send data to a server. This data is most of the times read by a cookie, a piece of information that a website puts on an user's hard disk so that it can remember something about the user at a later time. Scripts read the cookies on a user's computer and subsequently the scripts can perform actions based on this data. Data that can be collected by cookies is for example browser data (e.g., language settings), previous online behaviour, IP address, and geographical location. Besides, they can roughly gain some information about gender, age and interests (Clifton, 2010).

Online personalization trends

The different methods of collecting personal data online create personalization opportunities for online marketers. Consequently, three different personalization trends can be distinguished today: social-based personalization, behavioural profiling, and location-based personalization (Toch, Wang, & Cranor, 2012). The first personalization trend is behavioural profiling, which is the process of gathering longitudinal data about a person's activities and tailoring the user experience based on those activities (Toch et al., 2012). Behavioural profiling does not rely on data that is provided by the user, although in most cases a system with cookies tracks a wide range of user behaviour over a longer period with no or just a little consent of the user. Lately, behavioural profiling became more and more popular in domains like Internet advertising, web search and e-commerce (Toch et al., 2012).

Another personalization trend is location-based personalization. Location-based personalization means offering users of mobile devices services based on their physical location. The adoption of GPS smartphones and WiFi underlies this trend and it is mostly used to improve the search results in the search engine by adapting them to the user's location (Toch et al., 2012).

The third personalization trend is social-based personalization. Social-based personalization is using information from online profiles that users have to create for social networking sites like Facebook, LinkedIn, and Instagram to personalize advertisements (Toch et al., 2012).

The current research does take the trends social-based personalization and behavioural profiling by Toch et al. (2012) into account since these are frequent trends for online advertisements. Location-based personalization is not be taken into account because location-based personalization is especially used in response to search queries that users enter in search engines on their smartphones (Toch et al., 2012). The methodology of the current research is not able to comprise this due to lack of technological possibilities.

Effect of personalization

The theory behind personalization mainly lies in how people process messages. As mentioned before, personalized messages are messages that incorporate recognizable aspects of a person in the content information (Dijkstra, 2008). Consequently, a personalized message refers to the individual and therefore triggers self-reference (Dijkstra & Ballast, 2012). Because self-reference is activated by the personalized message, the content information of the message is likewise processed against the background of the self. Once the personalization item (e.g., first name) directs to the self, everything is set into motion to process the information in the background of the self, even without precisely evaluating the self-relevance of the content information. At the moment that the information is processed, the content information is perceived as personally relevant as it becomes mixed with information of the self in the working memory (Dijkstra & Ballast, 2012).

A related idea is that personalization, by triggering the self-reference, arouses the central route processing of *the elaboration likelihood model of persuasion* (Hawkins et al., 2008). The elaboration likelihood model, which is developed by Petty and Cacioppo (1986), describes a framework for organizing and understanding the basic processes that underlie the effectiveness of persuasive communications and claims that there are two routes to persuasion, the central route and the peripheral route. The central route demands a great effort of attention whereby the person draws upon prior experience and knowledge in order to carefully inspect all information to determine all the merits, while the peripheral route requires little conscious thoughts

(Petty & Cacioppo, 1986). Burnkrant and Unnava (1989) found a positive relationship between activating the self-reference and the central route of the elaboration likelihood model. They found that participants in the self-referring condition were more persuaded by strong arguments than participants in the standard condition. This illustrates how referring to the individual in a message can affect the processing of the message. Therefore, this perspective suggests a relationship between personalization and advertising effectiveness. Personalization in online advertisements increases self-reference (Dijkstra & Ballast, 2012) and thereby might evoke more positive advertisement responses.

Different empirical studies also provide support for this mechanism. Positive personalization effects were found in the personalization of webpages (Tam & Ho, 2005). In addition, sending personalized mobile advertisements positively influences users' consumption behaviour (Xu, Liao, & Li, 2008). Moreover, the personalization of a website has positive effects on the attitude towards the ads on that website (Kim & Sundar, 2012). Furthermore, higher personalized advertisements on social networking sites result in a more positive attitude toward the ad, brand engagement and more intention to forward the ad (Walrave et al., 2016). Besides, personalization in social network sites positively affects brand engagement (Antheunis & van Noort, 2011) and the response towards the advertisements through perceived relevance and click intention (de Keyzer, Dens & de Pelsmacker, 2015). Therefore, the first hypothesis is:

H1: Personalized advertisements have a positive effect on attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement.

Personalization and privacy concerns

Although personalization can enhance brand and campaign responses (Walrave et al., 2016; Antheunis & van Noort, 2011; de Keyzer et al., 2015), a potential hazard of personalization are related privacy concerns (van Doorn & Hoekstra, 2013; Graeff & Harmon, 2002; Phelps et al., 2001). Privacy is the desire of an individual to control or have some influence over data about themselves (Bélanger & Crossler, 2011). In other words, we have a strong desire to control everything in our life and therefore when we have the feeling that we don't control our personal information we may relate negative feelings to this (Baker, Gentry, & Rittenburg, 2005). This corresponds with *the psychological ownership theory* (Pierce, Kostova, &

Dirks, 2001) that refers to the fact that people evolve feelings of ownership for a range of objects, material and immaterial in nature, and therefore also their own data. The perceived control of consumers over their personal information promotes the feeling of psychological ownership (Liu, Wang, Hui, & Lee, 2012).

Therefore, in the current research information privacy is described as the feeling of the individual of controlling and psychological owning his or her personal information (Bélanger & Crossler, 2011; Pierce et al., 2001). Thus, consumers can have privacy concerns at the moment that they have the feeling that they do not control or own their personal information anymore although that it is public or in hand of a third party (Baker et al., 2005). As mentioned before, marketers need to collect personal data in order to personalize the advertisements (Kazienko & Adamski, 2007). If the receiver of a personalized advertisement becomes aware of the fact that his or her personal data is in hand of the marketer he or she could evoke privacy concerns. Consequently, these privacy concerns might negatively affect advertising effectiveness (Phelps et al., 2001).

Some previous studies have reported that using personal data for advertisements comes along with negative effects (Van Doorn & Hoekstra, 2013; Graeff & Harmon, 2002). Customers have strong privacy concerns about how personal data is collected and used (Graeff & Harmon, 2002). Moreover, results from a national mail survey indicate that privacy concerns of customers are negatively related to purchase behaviour (Phelps et al., 2001). Furthermore, van Doorn and Hoekstra (2013) argue that customers with higher level of privacy concerns perceive personalized ads as more intrusive and consequently the respondents are less likely to purchase intrusive offers. Moreover, they found that privacy concerns do not have a negative effect on purchase intentions in the financial sector, although in the telecommunication sector privacy concerns did lead to lower purchase intentions.

However, Walrave et al. (2016) found some contradictory results. They examined whether privacy concerns moderate the effect between personalization and advertising effectiveness among adolescents and found that privacy concern among adolescents did not affect the advertising effects of personalization. These findings might be explained by *the privacy paradox* (Barnes, 2006). The privacy paradox theory indicates that users of social network sites are concerned about their privacy but do not act upon these concerns according to their behaviour. A previous study by Debatin, Lovejoy, Horn, and Hughes (2009) into Facebook users' awareness of

privacy issues confirms the existence of this privacy paradox by claiming that customers do understand the privacy issues, but yet are uploading large amounts of personal information.

Though, Walrave et al. (2016) investigated privacy concerns in response to social media campaigns. The participator of social media campaigns probably becomes aware on forehand of the fact that his or her personal data is used because the user agrees with it at the moment that he or she gives consent directly before participating in the campaign. For the online advertisements, the consent is given at the moment that the users create a social media profile and therefore there can be a longer time period between the moment that the consent is given and the moment that the user sees the online advertisement. Here occurs an important difference with the personalization of online display advertisements according to the given consent by the user to use the personal information. Besides, for the online display advertisements mostly also behavioural profiling (the use of online behaviour data to personalize) is applied. Moreover, personalization evokes privacy concerns in a covert personalization approach, while such relationship does not occur in an overt personalization approach (Xu, Luo, Carroll, & Rosson, 2010). In contrary to the overt approach, in the covert approach people do not give away their personal data their selves but they are automatically tracked and at the moment that this situation occurs, personalization increases privacy concerns (Xu et al., 2010).

As mentioned before, this research does take the personalization strategy behavioural profiling into account (Toch et al., 2012). Behavioural profiling does not rely on data that is provided by the user, but in most cases a system tracks a wide range of user behaviour by cookies with no or just a little consent of the user. Based on earlier research (Xu et al., 2010), it is assumed that this strategy evokes more privacy concerns than when personal data is consciously given by the consumer. Besides, a number of researchers have reported the negative effects of personalization on privacy concerns (Van Doorn & Hoekstra, 2013; Graeff & Harmon, 2002) and these privacy concerns are negatively related to purchase behaviour (Phelps et al., 2001). Therefore, the second hypothesis, which is visualized in Figure 1, is:

H2: The personalization of display advertisements has a positive effect on customer's privacy concerns **(H2a)**, which in turn has a negative effect on attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement **(H2b).**

The Uncanny Valley of Personalization

Another potential hazard of personalization is that personalization might evoke feelings of unfamiliarity that is known as the *uncanny valley of personalization* (Watson, 2014). As mentioned before, a lot of our personal data is 'saved' by cookies, scripts and our online registration on social network sites (Kazienko & Adamski, 2007). Based on this data companies like Google think that we are interested in particular subjects, like football, traveling and parenting and subsequently shows us advertisements that are related to this. These personalized advertisements are supposed to reflect the individual and refer to the self-reference (Dijkstra & Ballast, 2012). However, sometimes the advertisement does not match our understanding of ourselves and we become unfamiliar with whether they refer to the self-reference. At this moment the uncanny emerges (Watson, 2014).

The uncanny valley of personalization is based on a theory about robotics of Mori (1970) that is named *the uncanny valley*. Mori (1970) described people's reactions to robots that look like humans. His theory indicates that as the appearance of a robot becomes more human, the emotional response of humans to the robot would become more empathic, until a moment it abruptly shifts from empathy to revulsion when it becomes too human-like. At the moment that the robot becomes too human, it enters the so-called uncanny valley.

Watson (2014) hypothesizes that such uncanny valley also exists for personalization. As the personalization becomes more, the responses of customers to personalization become more positive, until a moment it abruptly shifts to unfamiliar when the ad becomes too personal. At this moment customers enter the uncanny valley because they cannot distinguish whether something is targeted in general or very personally. The uncanny valley of robotics is based on visual cues between robots and humans, like the movements, the eyes and the skin (Mori, 1970). On the other hand, the uncanny valley of personalized online advertisements is based on our interests and needs of which the contours of the data where they are based on are obscured by a black box of algorithms (Watson, 2014). The algorithms are based on an unknown set of prior behaviours saved by cookies and scripts and therefore the algorithms may anticipate intentions we might not even know we have. As a consequence, the uncanny valley of personalization is entered because the data is too close and not close enough to what we know about ourselves (Watson, 2014).

The uncanny valley relates to 'the treatment of the uncanny' of Freud (1919) in which he defines what uncanny is. Freud (1919) argues that the uncanny is the *unheimlich*, which is an unfamiliar, uncomfortable or weird feeling. However, *unheimlich* also means revealed, uncovered or what is made known but supposed to be kept secret. Watson (2014) argues that consumers might think of their browsing history this way. Their behaviour is revealed and reflected back to them because of the digital traces. They do not think that an advertisement is relevant, but it repulses them, because they are worried that it could be.

One study has proved the existence of the uncanny valley theory for robotics and other human-like objects such as avatars in computers games, dolls and masks (Seyama & Nagayama, 2007). A small body of literature introduces the theory for personalization (Watson, 2014; Strong, 2014). Besides, Wohn and Sarkar (2014) suggest that the uncanny valley effect occurs when consumers get a weird unfamiliar feeling when an ad is too personal according to the results of a qualitative study. Yet, no empirical research has been done to investigate the existence of an uncanny valley for personalization.

In summation, personalized advertisements have a positive effect on attitude towards the ad, brand engagement and intention to forward the ad (Walrave et al., 2016). However, when the advertisements become too personal, customers might feel unfamiliar (Watson, 2014) and consequently these feelings of unfamiliarity might negatively influence advertising effectiveness. Thus, the third hypothesis, which is visualized in Figure 1, is:

H3: Highly personalized display advertisements have a positive effect on a customer's feeling of unfamiliarity **(H3a)**, which in turn has a negative effect on attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement **(H3b).**
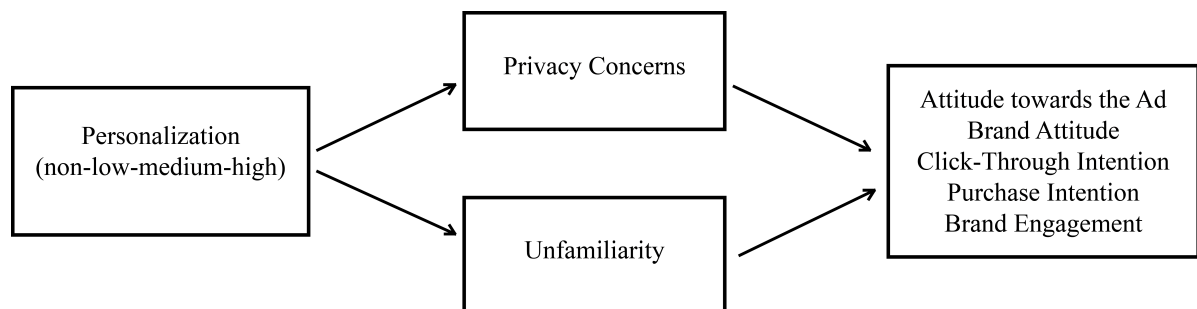

Figure 1. The theoretical model

Method

Participants

      Participants for this study were gathered by convenience and snowball sampling. Respondents from the personal network of the researcher were asked in an online personal message to participate in the study. All the respondents participated voluntary in the study and did not get a compensation for their participation.

      A total of 201 Dutch participants participated in this study. Of these participants, 7 did not or did not correctly fill in their first name or place of residence, which was necessary for the manipulation to succeed. Therefore, these participants were not taken into account what leaves a total of 194 participants existing out of 104 men and 90 women aged between 16 and 85 years old ($M = 27.35$, $SD = 10.92$). The major part of the participants is highly educated (High School = 3.6%, MBO =15.5%, HBO = 47.9%, WO = 32%). Additionally, the participants were randomly assigned to the non- (24.2%), low- (24.2%), medium- (24.7%), or high-personalized condition (26.8%).

Design and procedure

      To test the hypotheses, an experimental study was conducted. An experiment is an appropriate method to reveal the underlying mechanisms of personalization and to test causal relationships (Treadwell, 2013) between the independent variable (personalization), mediators (privacy concerns and unfamiliarity) and the dependent variables (attitude towards the ad, brand attitude, click-through intention, purchase intention, and brand engagement).

      Participants were invited for the experiment on social media or by e-mail. This invitation contained a link to the online survey in Qualtrics that randomly assigned the participant to one of four conditions (non, low, medium or high personalization). Therefore, this experiment is conducted with a between-subject design that includes four different conditions. First, the survey started with an informative text about the procedure of the study. This text informed the participants about the duration of the study, that participation is voluntary and that the data was treated anonymously. Next, participants had to answer some demographic questions, like first name, gender, education and residence.

      According to their answer on gender a scenario for females or males was shown. The scenario was implemented, because this study takes the personalization

trend behavioural profiling into account. Behavioural profiling is based on the longitudinal data about a person's activities on the Internet (Toch et al., 2012). Therefore, the participants were informed about their so-called previous Internet activities by the use of a scenario. According to the content the scenario was the same for all the participants. Though, to keep the scenario as realistic as possible, some small differences between the scenario for males and females were necessary. No differences in results according to this are expected. The scenario for females was the following:

> *"Imagine, your menstrual period remains out, while your period actually already should have started. You are concerned about this. Therefore, you start looking on the Internet through Google for reasons why you are not menstruating and you view some informative websites about this. Afterwards, you send a good friend a private message on Facebook in which you express your concerns. Then, you visit some websites with pasta Bolognese recipes, because you want to cook something in the evening. A moment later you view the weather website buienradar.nl and you see the following advertisement:*

The scenario for males was the following:

> *"Imagine, your girlfriend/wife told you that her menstrual period remains out, while her period actually already should have started. You are concerned about this. Therefore, you start looking on the Internet through Google for reasons why she is not menstruating and you view some informative websites about this. Afterwards, you send a good friend a private message on Facebook in which you express your concerns. Then, you visit some websites with pasta Bolognese recipes, because you want to cook something in the evening. A moment later you view the weather website buienradar.nl and you see the following advertisement:*

The participants were asked to read the scenario carefully and to imagine that the situation described in the scenario was valid for them.

Hereafter, a webpage of Buienradar.nl with an advertisement was shown. The advertisement was a modified version of an existing online advertisement from EMTÉ, which is a Dutch supermarket that has 130 supermarkets in the Netherlands (EMTÉ Supermarkten, 2016). The advertisement of a supermarket offered the possibility to personalize the advertisement in different levels. Therefore, an ad of a supermarket brand was chosen.

Type of advertisement

Non-personalized

Low personalized

Medium personalized

High-personalized

Figure 2. Overview of the conditions with corresponding advertisements

The original advertisement was modified into a non-, low-, medium- and high-personalized advertisement by changing textual features. In the non-personalized advertisement the text was "let your groceries deliver at home". In the low personalized advertisement the text was the following: "Hi [First Name], let your groceries deliver in [Residence]". Thus, this ad only included the social-based personalization trend. The text in the medium personalized advertisement was "Hi [First Name], mood for a pasta? Let your groceries deliver in [Residence]". Therefore, this ad included the social-based as well as the behavioural profiling trend. Last, the highly personalized advertisement had the following text: "Hi [First Name], family expansion? Let your groceries, such as a pregnancy test, deliver in [Residence]". Besides social-based and behavioural profiling trends, the high-personalized advertisement also anticipates on an intention of which the participant might not even be aware he or she has, namely that she/the girlfriend might be pregnant.

The first name and residence were different for every advertisement by implementing the answers that the participants answered to the first questions, "what is your first name?" and "what is your place of residence?" into the ads by use of a Javascript code. Therefore, every participant saw his or her own first name and place of residence in the advertisements. The Javascript code consisted out of a cookie that saved the personal information of the participant on its hard disk and retrieved it at the moment the ad was shown. Since in a real digital environment cookies also gather personal information (Clifton, 2010) this enhanced the validity of this research. Besides the aspects of personalization, all other features of the advertisements were the same. Since the original advertisement was a modified advertisement of an existing brand, the external validity of the experiment is enhanced. Figure 2 presents the different advertisements for a fake participant with as first name John and as residence Amsterdam.

The advertisement was shown on top of a webpage of Buienradar.nl, a Dutch weather forecast website, to make clear that the advertisement is an online display banner and not an offline advertisement. Besides, in the real online environment display advertisements are also shown on webpages. Therefore, it enhanced the external validity of this research. Buienradar.nl is the biggest weather forecast website of the Netherlands with more than 900.000 visits a day (RTL Nederland, 2016). Thus, a webpage of Buienradar is recognizable for the participant. Figure 3 shows the webpage with the ad.

The participants were asked to look closely to the webpage with the ad. Beneath the webpage the text "have you seen the advertisement of EMTÉ? If yes, move on" was depicted to make sure that the participant really saw the ad. Next, they were asked to answer questions about privacy concerns, unfamiliarity, advertisement attitude, brand attitude, click-through intention, purchase intention, brand engagement and a manipulation check for personalization. The participant could not see the advertisement anymore while answering these questions. Finally, a text informed the participants that the advertisement is not a real advertisement of EMTÉ and that the study is not created in cooperation with EMTÉ. Besides, the participants were thanked for their participation.
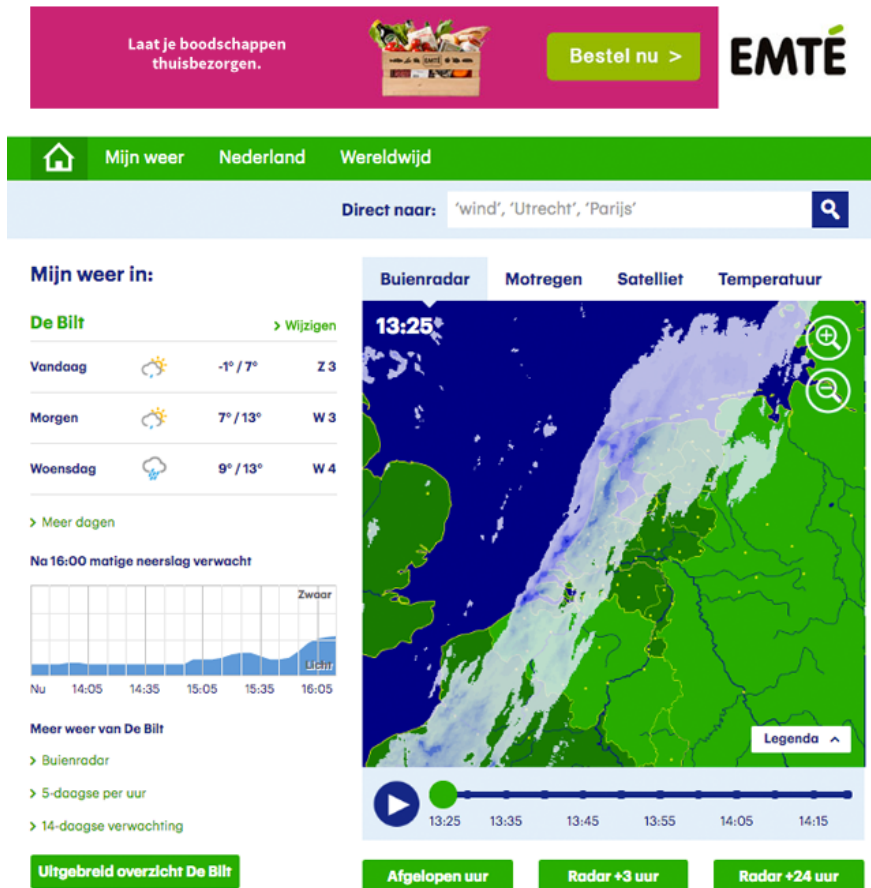
Figure 3. Buienradar webpage with the non-personalized advertisement.

Measurements

Privacy concerns. Participant's privacy concerns were measured according to four items on a five-point Likert scale (1 = *totally disagree,* 5 = *totally agree*). These items were created according to a research of Dinev and Hart (2004) who in turn based the items on the measurement of Smith, Milberg, and Burke (1996). The items are: "When faced with this advertisement, it bothers me that the advertiser is able to track information about me", "When faced with this advertisement, I am concerned that the advertiser has too much information about me", "When faced with this advertisement, it bothers me that the advertiser is able to access information about me", and "When faced with this advertisement, I am concerned that my information could be used in ways I could not foresee". The factor analysis showed that all items loaded on one factor (explained variance = 68.6%) and the Cronbach's Alpha reliability of the privacy concerns was .90 ($M = 3.68$, $SD = 1.37$).

Unfamiliarity. Six items on a five-point Likert scale (1 = *totally disagree, 5 = totally agree)*, based on Freud (1919), measured the mediating variable unfamiliarity. The statements were the following: "I think this advertisement is uncomfortable", "I think this advertisement unconcealed what supposed to be kept secret", "I think this advertisement is weird", "This advertisement reveals what should be private", "I think this advertisement is peculiarly", and "I think this advertisement is secretly". The factor analysis showed that all items loaded on one factor (explained variance = 59.6%) and the Cronbach's Alpha reliability of unfamiliarity was .89 (M = 2.89, SD = 0.94).

Attitude toward the ad. Attitude toward the advertisement was measured by four items on a five-point semantic differential scales. Four oppositions were used, *good/bad, like/dislike, interesting/uninteresting*, and *irritating/not irritating* (Mitchell & Olson, 1981). The factor analysis showed that all items loaded on one factor (explained variance = 41.9%) and the Cronbach's Alpha reliability of the attitude towards the ad was .73 (M = 2.54, SD = 0.75).

Brand attitude. Brand attitude was measured as 'overall feeling about the brand' by use of a five-point semantic differential scale likewise based on Mitchell and Olson (1981). This scale measured the overall feeling of a person about EMTÉ by five evaluative scales, namely the following*: good/bad, dislike very much/like very much, pleasant/unpleasant, valuable/worthless*, and *poor quality/high quality*. The factor analysis showed that all items loaded on one factor (explained variance = 55.8%) and the Cronbach's Alpha reliability of brand attitude was .86 (M = 3.02, SD = 0.61).

Click-through intention. Click-through intention was assessed with two items based on Aguirre et al. (2015), "I would like to click on the advertisement to get further information" and "I intend to click on the advertisement to get further information". The items were measured along a five-point Likert scale (1 = *totally disagree*, 5 = *totally agree*). The factor analysis showed that all items loaded on one factor (explained variance = 85.5%) and the Cronbach's Alpha reliability of the click-through intention was .92 (M = 1.83, SD = 0.94).

Purchase intention. Purchase intention was measured by three items on a five-point Likert scale (1 = *totally disagree, 5 = totally agree*) to measure how likely a participant was to purchase the evaluated service (Li, Daugherty, & Biocca, 2002). The items were the following: "It is very certain that I would use the grocery service

of EMTÉ", "It is very likely that I would use the grocery service of EMTÉ, after having seen this ad", and "I would definitely use the grocery service of the EMTÉ". The factor analysis showed that all items loaded on one factor (explained variance = 76.5%) and the Cronbach's Alpha reliability of the purchase intention was .90 ($M =$ 1.65, $SD = 0.77$).

Brand engagement. To measure brand engagement respondents had to answer five items on a five-point Likert scale (1 = *totally disagree,* 5 = *totally agree*) based on research of Sprott, Czellar, and Sprangenberg (2009). Examples of these items are: "I often feel a personal connection between me and EMTÉ", "I can identify with EMTÉ in my life", and "I have a special bond with the brand EMTÉ". The factor analysis showed that all items loaded on one factor (explained variance = 73%) and the Cronbach's Alpha reliability of brand engagement was .94 ($M = 1.34$, $SD = 0.59$).

Results

Manipulation check

Before the data was analysed a one-way ANOVA was conducted to test whether the personalization manipulation was successful. To indicate the level of personalization in the advertisements, participants completed one item on a seven-point Likert scale (1 = *totally disagree,* 7 = *totally agree*): "this advertisement is directed to me personally"; Aguirre et al. (2015); $M = 4.02$, $SD = 1.98$.

The Levene's test ($F(3, 190) = 2.19$, $p = .091$) showed that there is no significant difference in the variances of the four groups, which means that the assumption of homogeneity of variance is met. Overall, there was a significant difference between the levels of personalization of the advertisements ($F(3, 190) = 11.48$, $p < .001$). Subsequently, post hoc comparisons using the *Bonferroni* tests were conducted to test whether the means significantly differ from each other. The results of the *Bonferroni* tests are presented in Table 1. Furthermore, Table 1 shows that the means of the non-, low-, and medium-personalized advertisements indicate an increase in personalization. However, the mean of the high-personalized condition is lower than the mean of the medium-personalized condition.

An explanation for the non-perceived difference in personalization between the medium- and the high-personalized advertisements is that they both included social-based personalization as well as behavioural profiling. The difference between

Table 1.

The means and standard deviations of personalization for the different advertisements.

Type of advertisement	M	SD	N
Non-personalized	2.85[cd]	1.56	47
Low-personalized	3.75[c]	1.80	48
Medium-personalized	4.87[ab]	1.87	52
High-personalized	4.51[a]	2.07	47

Notes.
[a] significant difference from the non personalized condition
[b] significant difference for the low personalized condition
[c] significant difference from the medium personalized condition
[d] significant difference from the high personalized condition
Significant at the $p < .05$ level.

the two advertisements can be found in the subjects they tighten. The high advertisements subject (pregnancy) is more personal than the subject of the medium ad (food). Despite that the subject of the high advertisement is more personal, the participants might have rated the ad itself not as more personalized. Besides, the results show a clear increase according to personalization in the non-, low-, and medium-personalized ads and distinguishing the different levels is very important according to the literature (Watson, 2014; Mori, 1970; Strong, 2014). Therefore, the current research retains the levels of personalization despite the fact that the results from the manipulation check are not as expected.

Relationship between personalization and advertising effectiveness

   To test the first hypothesis, the personalization of advertisements has a positive effect on advertising effectiveness, a one-way between subjects ANOVA was conducted to compare the effect of personalization on the dependent variables in the non-, low-, medium-, and high-personalized conditions. All the five Levene's tests were not significant indicating that there were no significant differences in the variances of the four groups (Table 2). Therefore, the assumption of homogeneity of variance is met.

Table 2.

Results of the Levene's tests of the ANOVA's for the corresponding dependent variables.

Dependent variable	F	p
Attitude towards the Ad	0.58	.627
Brand Attitude	1.16	.328
Click-through Intention	1.19	.314
Purchase Intention	1.48	.222
Brand Engagement	2.01	.114

   The results of the ANOVA show that there was a significant difference in attitude towards the ad related to personalization ($F(3, 190) = 6.26$, $p < .001$; Figure 4). Subsequent, post hoc comparisons using the *Bonferroni* test indicated that the attitude towards the ad was significantly more negative for the high personalization ad ($M = 2.16$, $SD = .66$) as compared to the non-personalized ad ($M = 2.71$, $SD = .73$, $p <$

.002), the low-personalized ad ($M = 2.57$, $SD = .68$, $p = .041$) and the medium-personalized ad ($M = 2.72$, $SD = .78$, $p = .001$)
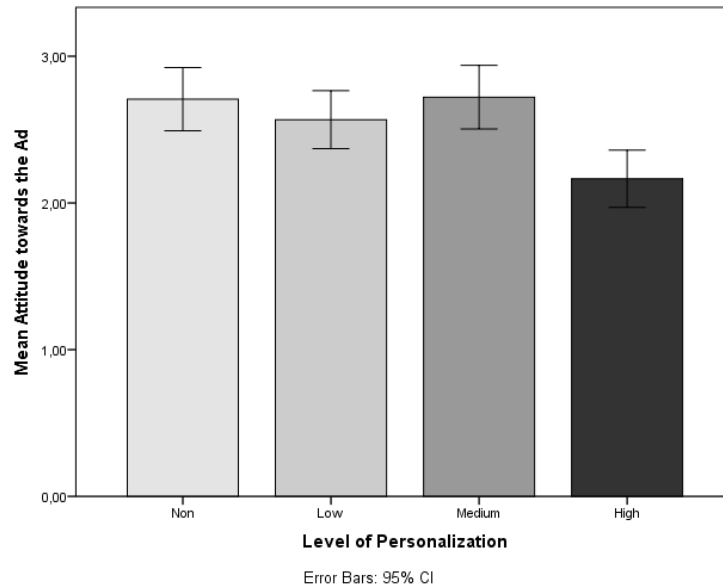
Figure 4. Levels of personalization and their related means for attitude towards the ad.

Moreover, the results show that there is likewise a significant difference in brand attitude related to personalization ($F(3, 190) = 6.73$, $p < .001$) (Figure 5). *Bonferonni* post hoc tests indicate that the brand attitude for the high personalization ad ($M = 2.7$, $SD = .56$) was significantly more negative as compared to the non-personalized ad ($M = 3.1$, $SD = .55$, $p = .009$), the low-personalized ad ($M = 3.03$, $SD = .58$, $p = .044$) and the medium-personalized ad ($M = 3.22$, $SD = .65$, $p < .001$). Furthermore, the results revealed that there are no significant effects of personalization on click-through intention, purchase intention and brand engagement.

In sum, the results do indicate that there are significant differences in advertisement- and brand attitude between the high-personalized ad and the other advertisements. However, the high personalization has a negative effect on advertisement attitude as well as brand attitude and not a positive effect as supposed by the hypothesis. Therefore, no support for the first hypothesis has been found.

Mediation analyses

The second hypothesis stated that personalization has a positive effect on customers privacy concerns, which in turn have a negative effect on advertising effectiveness. The third hypothesis stated that highly personalized ads have a positive effect on a customers feeling of unfamiliarity, which in turn has a negative effect on
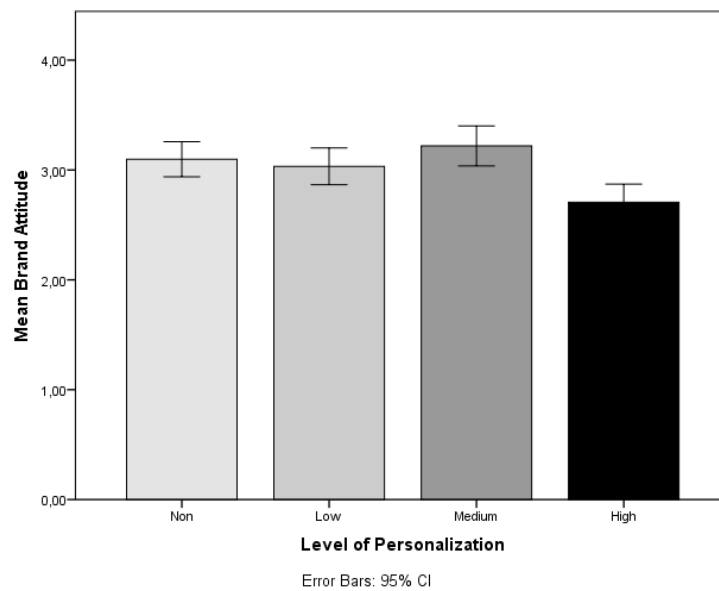
Figure 5. Levels of personalization and their related means for brand attitude

advertising effectiveness. To test these hypotheses, ten mediation analyses were conducted each with one of the advertising effectiveness variables (attitude toward the ad, brand attitude, click-through intention, purchase intention, and brand engagement) as outcome variable and one of the mediating variables (privacy concerns or unfamiliarity) as mediator. The mediation analyses were conducted by model 4 of Hayes (2016) with the indicator method for the multicategorical independent variable 'level of personalization'. The indicator method was implemented to assess the difference between the four levels of personalization and conducted dummy variables with the non-personalization level as a baseline.

Relationship between personalization, privacy concerns and advertising effectiveness

To test whether personalization had an effect on the dependent variables through privacy concerns mediation analyses were conducted. The results show that low personalization did not significantly had a direct effect on privacy concerns ($b = 0.33$, $t = 1.23$, $p = .222$) as compared to the non-personalized advertisement. However, medium personalization did have a significant direct effect on privacy concerns ($b = 0.68$, $t = 2.59$, $p = .010$) as well as high personalization ($b = 1.18$, $t = 4.34$, $p < .001$). At the moment that the level of personalization becomes higher privacy concerns increase. Thus, hypothesis H2a is supported.

Moreover, the results show that for the low-personalized condition privacy concerns did not have a significant direct effect on all the dependent variables. For the medium-personalized condition only a significant direct effect of privacy concerns on

purchase intention was found ($b = 0.33$, $t = 2.13$, $p = .035$) and for the high-personalized condition significant direct effects of privacy concerns on attitude towards the ad ($b = -0.41$, $t = -2.72$, $p = .007$) and brand attitude ($b = -0.34$, $t = -2.71$, $p = .007$) were found.

Furthermore, the results show a significant indirect effect of personalization on attitude towards the ad through privacy concerns for the medium-personalized advertisement ($b = -.075$, 95% CI [-.209, -.012]) and the high-personalized advertisement ($b = -.128$, 95% CI [-.284, -.033]). Medium personalization had a positive effect on privacy concerns, which in turn also had a small positive effect on attitude towards the ad. High personalization had a positive effect on privacy concerns, which in turn, in contrary of medium personalization, had a negative effect on attitude towards the ad. No significant mediation effects for the low-personalized advertisement were found. Thus, hypothesis H2b is partly supported.

Likewise, mediation analyses were conducted for the dependent variables brand attitude, click-through intention, purchase intention, and brand engagement. Though, no significant mediation effects for these variables were found. Table 3 shows a summary of the results of the analyses with privacy concerns as a mediator.

Table 3.

Summary of results of the mediation analyses: the indirect effects with 95% confidence intervals of personalization through privacy concerns on corresponding outcome variable.

Variable	*Low vs. None*	*Medium vs. none*	*High vs. none*
Attitude towards the Ad	$b = -0.036$	$b = -0.075$	$b = -0.128$
	[-.155, .013]	[-.209, -.012]*	[-.284, -.033]*
Brand Attitude	$b = -0.013$	$b = -0.027$	$b = -0.047$
	[-.072, .050]	[-.101, .009]	[-.153, .022]
Click-through Intention	$b = -0.003$	$b = 0.006$	$b = 0.010$
	[-.040, .077]	[-.078, .106]	[-.136, .162]
Purchase Intention	$b = -0.011$	$b = -0.023$	$b = -0.039$
	[-.098, .013]	[-.118, .034]	[-.175, .062]
Brand Engagement	$b = -0.005$	$b = 0.011$	$b = -0.018$
	[-.057, .013]	[-.078, .029]	[-.122, .054]

* Confidence Intervals that contain zero and are significant.

In summation, significant mediation effects for medium- and high personalization on attitude towards the ad were found. However, no significant mediation effects of personalization through privacy concerns for the other dependent variables were found. Therefore, the second hypothesis is partly supported.

Relationship between personalization, unfamiliarity and advertising effectiveness

To test the third hypothesis, highly personalized advertisement have a positive effect on a customer's feeling of unfamiliarity which in turn has a negative effect on advertising effectiveness, mediation analyses were conducted. The results show that low personalization ($b = 0.41$, $t = 2.49$, $p = .013$), medium personalization ($b = 0.54$, $t = 3.35$, $p = .001$) and high personalization ($b = 1.37$, $t = 8.21$, $p < .001$) all had a significant direct effect on unfamiliarity compared to the non-personalized condition. At the moment that the personalization becomes more feelings of unfamiliarity increase, which support hypothesis H3a.

No significant direct effects of unfamiliarity on all the dependent variables for the low personalized and the high-personalized advertisement were found. For the medium-personalized condition, a significant effect of unfamiliarity on purchase intention was found ($b = 0.35$, $t = 2.24$, $p = .026$).

Moreover, the results show that for the low, medium and high-personalized advertisements personalization had an indirect effect on attitude towards the ad through unfamiliarity (low: $b = -0.118$, 95% CI [-.255, -.035], medium: $b = -0.155$, 95% CI [-.301, -.065], high: $b = -0.389$, 95% CI [-.637, -.219]) and on brand attitude through unfamiliarity (low: $b = -0.054$, 95% CI [-.147, -.005], medium: $b = -0.071$, 95% CI [-.173, -.014], high: $b = -0.177$, 95% CI [-.359, -.025]). Besides, medium personalization had an effect on click-through intention through unfamiliarity ($b = -0.092$, 95% CI [-.236, -.001] although no mediation effect of low and high personalization on click-through intention were found.

Table 4 shows a summary of the results of the analyses with unfamiliarity as a mediator. As can be see from Table 4, the effect of personalization on advertisement- and brand attitude is more for the high personalization as compared to the low- and medium personalization. Furthermore, medium personalization had a positive effect on unfamiliarity, which in turn also had small positive effects on advertisement- and brand attitude. High personalization had a positive effect on privacy concerns, which in turn, in contrary of medium personalization, had small negative effects on attitude

towards the ad and brand attitude. Moreover, the results reveal no mediation effects for purchase intention and brand engagement. Therefore, the third hypothesis is partly supported.

Table 4.

Summary of the results of the mediation analyses: the indirect effects with 95% confidence intervals of personalization through unfamiliarity on corresponding outcome variable.

Variable	*Low vs. None*	*Medium vs. none*	*High vs. none*
Attitude towards the Ad	b = -0.118	b = -0.155	b = -0.389
	[-.255, -.035]*	[-.301, -.065]*	[-.637, -.219]*
Brand Attitude	b = -0.054	b = -0.071	b = -0.177
	[-.147, -.005]*	[-.173, -.014]*	[-.359, -.025]*
Click-through Intention	b = -0.069	b = -0.092	b = -0.231
	[-.206, .000]	[-.236, -.001]*	[-.505, .021]
Purchase Intention	b = -0.034	b = -0.044	b = -0.112
	[-.117, .018]	[-.149, .026]	[-.311, .098]
Brand Engagement	b = -0.019	b = -0.025	b = -0.064
	[-.089, .018]	[-.101, .029]	[-.212, .077]

* Confidence Intervals that contain zero and are significant.

Discussion

The first aim of the present study was to investigate whether personalization has an effect on advertising effectiveness. Based on earlier research on personalization (Tam & Ho, 2005; Xu, Liao, & Li, 2008; Kim & Sundar, 2012; Walrave et al., 2016; Antheunis & van Noort, 2011), we expected that personalized advertisements have a positive effect on advertisement attitude, brand attitude, click-through intention, purchase intention, and brand engagement. Contrary to the expectations, no positive effects of personalization on all the dependent variables were found. The findings of the current study even showed that there is a negative effect of personalization on attitude towards the ad and brand attitude for the high-personalized advertisement instead of the expected positive effect.

There are three possible explanations for this inconsistent result. First, no earlier research investigated the effects of personalization of online display banners on advertising effectiveness. Earlier research investigated the effect of personalized webpages (Tam & Ho, 2005; Kim & Sundar, 2012), mobile advertisements (Xu, Liao & Li, 2008), and advertisements on social networking sites (Walrave et al., 2016; Antheunis & van Noort, 2011; de Keyzer et al., 2015). It may be that the processing of personalized messages in online display banners is different from other communication channels. The theory behind personalization is related to how people process messages (Dijkstra, 2008; Dijkstra & Ballast, 2012). Personalization activates the self-reference and consequently the personalized messages are perceived as personally relevant (Dijkstra & Ballast, 2012). By triggering the self-reference, the central route of the elaboration likelihood model is activated (Burkrant & Unnava, 1989). However, this central route demands a lot of attention (Petty & Cacioppo, 1986). Possibly online display banners get less attention, because people avoid looking at these banners when they are surfing online (Drèze & Hussherr, 2003). Consequently, the self-reference is possibly not triggered and the central route of the elaboration likelihood model is not activated. Thus, further research should investigate the relationship between personalization in online advertisements and the processing of the messages.

A second possible explanation is that the central route of the elaboration likelihood model was activated, although adverse reactions of the central route were likewise activated. Messages that are processed by the central route are processed with thoughtful consideration of the true merits of the information presented in

support of an advocacy (Petty & Cacioppo, 1986). However, this central processing is more likely to come along with counter arguing, evaluations of credibility of the message and the source, and other processes that may reduce message effects (Petty & Cacioppo, 1986; Hawkins et al., 2008). Therefore, it could be that the personalized messages in the display advertisements drew enough attention to activate the self-reference and the central route of processing, although the adverse reactions of the central route were likewise activated. Consequently, these adverse reactions could have negatively affected the advertising effectiveness. Future research should be undertaken to investigate the relationship between personalization and the activation of adverse reactions.

A third possible explanation is that during the survey participants had to answer questions about privacy concerns and unfamiliarity before they answered questions about the advertising effectiveness. Possibly the participant's privacy concerns and feelings of unfamiliarity were fuelled by the questions. Consequently, this may have influenced their answers on the questions about advertising effectiveness. This corresponds with the findings of Van Doorn and Hoekstra (2013) who found that customers with higher level of privacy concerns rate personalized ads more negatively. The theoretical model of the current study also proposed that privacy concerns and unfamiliarity are prior to advertisement responses and therefore the choice was made to follow the same questioning sequence. However, it might that earlier studies into personalization and privacy concerns did not followed the same sequence of questions as the proposed theoretical model (Walrave et al., 2016; Xu et al., 2010; Debatin et al., 2009). This would explain the inconsistent results with the current research.

The second aim of the present study was to examine the effect of personalization on advertising effectiveness by taking privacy concerns into account. The results partly supported the second hypothesis that personalization has a positive effect on a customer's privacy concerns, which in turn has a negative effect on advertising effectiveness. The results showed that for the high-personalized advertisement the personalization had a positive effect on privacy concerns, which in turn had a negative effect on attitude towards the ad. These results support the second hypothesis.

The part of the second hypothesis that is not supported concerned the medium personalized advertisement. The results showed that for the medium personalized

advertisements the personalization had a positive effect on privacy concerns, which in turn also had a small positive effect on the attitude towards the ad. A possible explanation for this may relate to the *privacy paradox* (Barnes, 2006). The privacy paradox theory indicates that people say that they are concerned about their privacy although they do not act upon these concerns (Barnes, 2006). Debatin et al. (2009) found support for the existence of the privacy paradox on social networking sites. It could be the case that the negative effects of the personalization do not overrule the positive effects. Despite that people are concerned about their privacy, they enjoy online advertisements that are more relevant and personal to them (Aguirre et al., 2015). A further study with more focus on the privacy paradox in online advertisements is therefore suggested. This study should investigate whether the privacy paradox is related to the level of personalization. Possibly the positive effects of personalization only overrule the negative effects up to certain degree of personalization.

Moreover, no support for the second hypothesis is found according to brand attitude, click-through rate, purchase intention, and brand engagement. Therefore, it can be concluded that this hypothesis relates to the level of personalization and is only valid for attitude towards the ad. As the personalization is high it might evoke more feeling of privacy concerns and in turn negatively affect a person's attitude towards the ad.

The last aim of the present study was to investigate whether there is support for *the uncanny valley of personalization* by investigating the effect of personalization on advertising effectiveness by taken unfamiliarity into account. The findings of the current study likewise partly supported the third hypothesis; high-personalized advertisements have a positive effect on a customer's feeling of unfamiliarity, which in turn has a negative effect on advertising effectiveness. The results showed that high-personalization has a positive effect on unfamiliarity, which in turn has a negative effect on attitude towards the ad and brand attitude. These results corroborate the ideas of Watson (2014) and Strong (2014), who suggest that the uncanny valley of Mori (1970) also exists for personalization. Moreover, these results are in line with the findings of Wohn and Sarkar (2014), who argue that the uncanny valley effect occurs at the moment that people get a weird unfamiliar feeling when an advertisements becomes too personal.

However, the hypothesis is not fully supported, since only an effect of personalization through unfamiliarity on attitude towards the ad and brand attitude was found. No effects on click-through intention, purchase intention and brand engagement were found. A possible explanation for this can be found in the nature of the measurements. Click-through intention and purchase intention are measurements that try to catch whether somebody would perform an action or not. Persuade people to perform an action in response to an ad might be more difficult than change their attitude. Besides, that no effects on brand engagement were found might be explained by the previous experiences that people already had with the brand. These previous experiences with the brand can bias their opinion about the brand (Mangleburg et al., 1998)

Theoretical and practical implications

This study contributes to extant research in two main ways. First, this study has demonstrated, for the first time, that not only privacy concerns are a hazard of personalization, although likewise feelings of unfamiliarity should be taken into account as a hazard. Thus, this is the first study that provides empirical evidence for the uncanny valley of personalization theory. Prior research offers opposing views of personalization and privacy concerns (Phelps et al., 2001; van Doorn & Hoekstra, 2013; Walrave et al., 2016), although our findings indicate that more variables should be taken into account while investigating the negative effects of personalization. Furthermore, prior researchers have proposed the existence of the theory (Watson, 2014; Strong, 2014) and one qualitative study has found support for it (Wohn & Sarkar, 2014), although the findings of the current study provide the first empirical quantitative evidence. Therefore, the findings help reconcile the debate about the uncanny valley of personalization.

Furthermore, this study contributes to the existing literature by providing insights into the different levels of personalization. Although some studies investigated different levels of personalization before (Walrave et al., 2016), no prior studies included a personalization level that had a subject that was as personal as in the current study. The findings clearly indicate that higher levels of personalization resulted in different effects than the lower levels. High-personalized advertisements increased feelings of unfamiliarity as well as privacy concerns that in turn had

negative effects on attitude towards the advertisement. Therefore, more research should be undertaken that includes high personalization levels.

This study also has some practical implications. The results of this study may be of particular interest to the digital marketing sector. The results indicate that marketers should be careful with personalization according to how they personalize their messages. Social-based personalization and behavioural profiling can be applied without causing negative effects, although marketers have to be careful that the subjects of the advertisements do not become too personal. Furthermore, marketers should take measurements like attitude towards the ad and brand engagement into account while analysing the effectiveness of their personalized advertisements and not only click-through rates. Personalized advertisements do not have an effect on click-through intention, although they do affect more traditional measurements like brand- and advertisement attitude.

Moreover, digital marketers should keep the results of the current study in mind while using automatic programs for showing display banners. Nowadays, it is not always the marketer anymore who decides which display banner is shown on a webpages, although automatic computer programs decide on which display banner to show at which moment on which webpage. Algorithms of these programs perform on personal data of consumers and anticipate on the intentions consumers have. However, the consumer might not feel familiar with the outcomes of the algorithms, namely the decision on which banner is shown. For instance, if the algorithm decides to show a display banner about pregnancy, although the receiver of that banner is not even aware that she is pregnant herself, she might relate negative feelings of unfamiliarity and privacy concerns to this, which in turn negatively affect the advertising effectiveness. Therefore, no matter how sophisticated the algorithm is, the digital marketer has to maintain the human touch. Thus, the recommendation for the marketer is to implement personalization strategies at the moment that they can create added value for the consumer. However, marketers have to stay aware of the fact that technologies, like personalization algorithms, are not always right in their predictions. Technologies are there to make our lives easier, although marketers should always combine these with human reasoning when they implement personalization strategies.

Limitations and suggestions for future research

Despite the previously described contributions for the digital marketing field this study is also subject to several limitations. The first limitation of the current research is that the results of the manipulation check for personalization were not in line with the expected results. The results indicated that the participants of the study did not perceive the high personalized advertisement as more personal as the medium personalized advertisement, although a clear increase according to personalization in the non-, low-, and medium personalized ads was found. It is important to keep this in mind while interpreting the results. A possible explanation for this is that the medium- and the high-personalized advertisement both included the social-based personalization as well as behavioural profiling trend (Toch et al., 2012). The difference between the medium and the high ad lied in the subjects they tighten. Therefore, it is recommended that further research should investigate whether how personal an advertisement is according to its subject has influence on the advertising effectiveness, since the results of the current study reveal that it is of importance for the additional privacy concerns and feelings of unfamiliarity.

Another limitation of this study is that the previous online behaviour of the participants was presented by means of a hypothetical scenario. Although a different scenario for males and females enhanced the external validity of the research, in the real digital environment cookies save the data about online behaviour over a longer time period. Thus, the experimental setting of the current study may differ from the real digital environment. However, the methodology of this study made it possible to capture concepts like privacy concerns and unfamiliarity. Besides, Atzmüller and Steiner (2010) claim that small vignette experiments allow for accurate and efficient estimations of effects. Still, it would be interesting to compare the results of real life data of personalized advertisements with the results of the current study. The results of this experimental study give insight into concepts like privacy concerns and unfamiliarity and the results of a study that analyses real life data will give additional insights in for example click-through rates. For instance, it would be interesting to know whether high personalized advertisement that in this study are perceived as less attractive also receive less click-through rates in the real digital environment. Therefore, additional research should be undertaken to compare results.

Moreover, since the current research found support for the uncanny valley of personalization, further research should be carried out to validate the existence of the

theory. Larger randomized controlled studies could provide more definitive evidence. Besides, the uncanny valley emerges at the moment that an advertisement becomes too personal (Watson, 2014). More research could investigate where the border lies between too personal and not too personal. Possibly the uncanny valley of personalization is also related to age, youth might feel less unfamiliar with personal advertisement as elderly, or communication channel. For instance, people might feel less unfamiliar with advertisements on social media channels. Therefore, this field of study still requires more research.

Conclusion

In conclusion, the findings of this study provide insight into personalized advertisements, privacy concerns and the uncanny valley of personalization. Contrary to expectations and earlier research, personalization appears not always to be an effective strategy. Moreover, the extent to which something is personalized is important. At a medium level of personalization, it seems that people say that they have more privacy concerns although it does not have an effect on how they perceive the ad, also known as the *privacy paradox*. However, at the moment that an advertisement is highly personalized, negative feelings of privacy concerns as well as unfamiliarity relate to this. Therefore, it seems that customers do not mind that advertisements are personalized until the personalization seems to know more about them than they know about their selves and become too personal. At the moment that the ad becomes too personal, the advertisement increases feelings of unfamiliarity and privacy concerns. Consequently, we perceive the advertisement as less attractive. These findings support the idea of *the uncanny valley of personalization*, which indicates that responses of customers to personalization become more positive as the personalization becomes more, until a moment it abruptly shifts to unfamiliar when the ad becomes too personal.

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Appendix 1

Survey online experiment

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Beste respondent,

Ten eerste, bedankt voor je deelname aan dit onderzoek! Lees de introductietekst hieronder goed voordat je verder gaat.

In verband met de grootte van de afbeeldingen is het belangrijk dat je **een computer of laptop** voor dit onderzoek gebruikt. Het scherm op een mobiele telefoon is te klein. Heb je geen mogelijkheid deze enquête op de computer of laptop in te vullen, wil ik je vragen om **niet** deel te nemen. Daarnaast kan het voorkomen dat het even duurt voordat een afbeelding is geladen, wacht dan even voordat je verder gaat.

In dit onderzoek ga je een advertentie bekijken en aan de hand daarvan krijg je enkele vragen. Voorafgaand aan de advertentie wordt een scenario aan je voorgelegd. Het is erg belangrijk dat je dit scenario goed leest en jezelf hierin verplaatst.

Dit onderzoek duurt ongeveer 5 minuten. Deelname aan dit onderzoek is geheel vrijwillig en je kunt de enquête te allen tijde afbreken. Alle verkregen informatie wordt uitsluitend voor dit onderzoek gebruikt en zal vertrouwelijk en anoniem worden behandeld.

Mocht je nog vragen hebben, dan kun je altijd contact opnemen met mij

Succes!
Silvie Scheepers

Wat is je voornaam?

Wat is je geslacht?

Man
Vrouw

Wat is je woonplaats?

Wat is je leeftijd?

Wat is je hoogst genoten opleiding?
Als je op het moment met een opleiding bezig bent, kies dan je huidige opleiding

Middelbare school
MBO
HBO
WO
Anders, namelijk:

>>

44

Lees het volgende scenario en probeer jezelf zo goed mogelijk in het scenario te verplaatsen.

Stel je voor, je menstruatie blijft uit en je maakt je hierover zorgen. Daarom zoek je op het Internet via Google naar redenen waarom je niet menstrueert, en je bekijkt enkele informatieve websites hierover. Daarna stuur je een goede vriendin een privé Facebook berichtje waarin je je zorgen uit.
Vervolgens bezoek je nog enkele websites met recepten voor een pasta bolognese, aangezien je 's avonds wilt gaan koken.

Even later kijk je op buienradar.nl en zie je de volgende advertentie:

>>

Bekijk de advertentie op onderstaande webpagina goed en ga dan door naar de volgende vraag. Je kan de pagina en advertentie daarna niet nogmaals bekijken.

Heb je de advertentie van EMTÉ bekeken? Zo ja, ga dan verder.
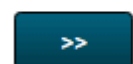
TILBURG UNIVERSITY

Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

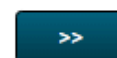|	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens	Eens	Helemaal Eens
Na het zien van de advertentie, zit het me dwars dat EMTÉ in staat is informatie over mij op te sporen.	O	O	O	O	O
Na het zien van de advertentie, ben ik bang dat EMTÉ te veel informatie over mij heeft.	O	O	O	O	O
Na het zien van de advertentie, ben ik bang dat EMTÉ in staat is toegang te verkrijgen tot informatie over mij.	O	O	O	O	O
Na het zien van de advertentie, ben ik bang dat mijn informatie kan worden gebruikt voor doeleinden die ik niet kan voorzien.	O	O	O	O	O

Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens.	Eens	Helemaal eens
Ik vind deze advertentie oncomfortabel.	O	O	O	O	O
Ik denk dat deze advertentie hetgeen wat geheim hoort te blijven niet verbergt.	O	O	O	O	O
Ik vind deze advertentie raar.	O	O	O	O	O
Deze advertentie onthult wat privé zou moeten zijn.	O	O	O	O	O
Ik vind deze advertentie eigenaardig.	O	O	O	O	O
Ik vind deze advertentie stiekem.	O	O	O	O	O

>>

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Hoe denk je over de advertentie?

Ik vind deze advertentie slecht	○	○	○	○	○	Ik vind deze advertentie goed
Ik vind deze advertentie niet leuk	○	○	○	○	○	Ik vind deze advertentie leuk
Ik vind deze advertentie irritant	○	○	○	○	○	Ik vind deze advertentie aangenaam
Ik vind deze advertentie saai	○	○	○	○	○	Ik vind deze advertentie interessant

Hoe denk je over EMTÉ?

Ik vind Emté niet leuk	○	○	○	○	○	Ik vind Emté leuk
Ik vind Emté onaangenaam	○	○	○	○	○	Ik vind Emté aangenaam
Ik denk dat Emté van slechte kwaliteit is	○	○	○	○	○	Ik denk dat Emté van goede kwaliteit is
Ik vind Emté waardeloos	○	○	○	○	○	Ik vind Emté waardevol
Ik denk dat Emté slecht is	○	○	○	○	○	Ik denk dat Emté goed is

>>

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Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

|	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens	Eens	Helemaal eens
Ik zal graag op de advertentie klikken om meer informatie te krijgen.	○	○	○	○	○
Ik heb de intentie om op de advertentie te klikken om meer informatie te verkrijgen.	○	○	○	○	○

Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens	Eens	Helemaal eens
Het is vrij zeker dat ik de boodschappenservice van de EMTÉ zal gebruiken.	○	○	○	○	○
Het is zeer waarschijnlijk dat ik de boodschappenservice van de EMTÉ zal gebruiken, nadat ik deze advertentie heb gezien.	○	○	○	○	○
Ik zal zeker de boodschappenservice van de EMTÉ gebruiken.	○	○	○	○	○

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Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens	Eens	Helemaal eens
Ik heb de intentie om over de advertentie te praten.	○	○	○	○	○
Ik zal graag aan anderen vertellen waar ze de advertentie kunnen vinden.	○	○	○	○	○
Ik zal graag met anderen praten over de advertentie.	○	○	○	○	○

Beantwoord in hoeverre je het met de onderstaande statements oneens of eens bent.

	Helemaal oneens	Oneens	Noch mee oneens, noch mee eens	Eens	Helemaal eens
Ik heb een speciale band met het merk EMTÉ.	○	○	○	○	○
Ik zie EMTÉ als een deel van mezelf.	○	○	○	○	○
Ik voel vaak een persoonlijke connectie tussen EMTÉ en mij.	○	○	○	○	○
Het voelt alsof ik een sterke persoonlijke connectie heb met EMTÉ.	○	○	○	○	○
Ik kan me identificeren met EMTÉ in mijn leven.	○	○	○	○	○
Er zijn relaties tussen EMTÉ en hoe ik mezelf zie.	○	○	○	○	○

>>

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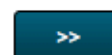
In hoeverre vond je dat de advertentie op jou persoonlijk gericht was?

Totaal niet gepersonaliseerd ○ ○ ○ ○ ○ ○ ○ Heel erg gepersonaliseerd

>>

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Voetnoot bij het onderzoek:
De advertentie die je hebt gezien is geen echte advertentie van EMTÉ, maar is speciaal voor dit onderzoek gecreëerd. EMTÉ heeft verder niets met het onderzoek te maken.

Sla je antwoorden op door op volgende te klikken.

>>

TILBURG ◆ UNIVERSITY
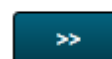
Bedankt voor uw tijd om aan deze enquête deel te nemen.
Uw antwoord is geregistreerd.

Uitgevoerd met Qualtrics