

Exploring the Effects of Perceived Relevance and Privacy Concerns on Consumer
Responses to Online Behavioral Advertising

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Abstract

Online behavioral advertising (OBA) is a new form of online advertising based on consumer online activity history. Despite the growing attention and use of this form of advertising, research on OBA is still in its early stages. This study presents preliminary investigation of consumer responses to OBA, particularly focusing on the effects of perceived ad relevance and perceived privacy concerns. Other influencing factors for the two perceptual responses are also explored.

An online survey was conducted with a volunteer sample of 292 MTurk users. The results indicate that perceived relevance of OBA is a strong, positive influencer of consumer responses to OBA while privacy concerns regarding OBA appear to play a negative yet less critical role. Perceived ad personalization, knowledge of OBA privacy risks, and institutional trust in online marketing practices were found to be significant factors influencing the two perceptual factors. Implications for advertising practitioners and directions for future research are discussed.

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CHAPTER 1. INTRODUCTION

Today, overflowing ad messages dominate every medium, and consumers are overwhelmed by excessive advertising messages. Not surprisingly, advertising avoidance is one of the frequently examined topics in the advertising field across traditional and new media (Baek and Morimoto 2012; Cho and Cheon 2004; Speck and Elliott 1997). In order to break through the ad clutter, today's advertisers aim at maximizing advertising message effects by making their ads stand out, noticeable, and unavoidable, preferably at a minimal cost and with minimal consumer irritation.

Continuously evolving data-gathering and mining technologies enable advertisers to achieve such goals by creating tailored ad messages for individual consumers (Baek and Morimoto 2012; Unni and Harmon 2007). Various direct marketing strategies like direct mail, telemarketing, and text messages have served advertisers to achieve such objectives. By using consumer data, such as demographics, shopping preferences, or purchase histories (Nowak and Phelps 1995; Phelps, Nowak, and Ferrell 2000; White et al. 2008), marketers have improved their ability to identify what messages to deliver for whom. Particularly with the technological advancement on the internet, not only have advertising techniques to deliver more personalized ad messages constantly evolved, but also ad messages can reach a wider range of target segments at a relatively lower cost in a much faster pace. Examples of online personalized advertising include email advertising, sponsored links on search engine results, and online newsletters.

One of the most recent developments in online personalized advertising is based on the web analytics data, which now enable advertisers to know what their current and prospective customers are interested in buying from their past online navigation behaviors. By tracking consumers' internet cookie data, advertisers can provide each individual consumer with ad messages regarding what she/he is actually interested in, instead of guessing what she/he might be interested in. This is called Online Behavioral Advertising (OBA).

According to the Federal Trade Commission Staff Report (2009), Online Behavioral Advertising (OBA) refers to “the practice of tracking an individual's online activities in order to deliver advertising tailored to the consumer's interests” (<http://www.ftc.gov/opa/2009/02/behavad.shtm/>). Most of the large portal and social network services, such as Google, Microsoft, Yahoo, and Facebook, are the leading players in OBA and have created their own OBA services. Google's AdSense is one of the most well-known OBA tools. Although there are no official statistics available about the size of OBA expenditures or the extent of utilization of this advertising form, more than 90 third-party online advertising/marketing companies have joined the coalition of OBA called Network Advertising Initiative to expand this practice and advocate current self-regulatory system (<http://www.networkadvertising.org/understanding-online-advertising/>).

The types of OBA vary, depending on the combination of the ad format and consumer information types used. Product search or purchase history or location data can be combined with text- or image-based banner ads. Among the different types of OBA,

this study examines the most common form, which is personalized banner ads that exactly re-show the specific products/services consumers have recently clicked on and viewed online or features the specific brands of online stores they have recently visited.

The primary purpose of this type of OBA is to give the target consumers vivid visual reminders of what they have been searching online. For example, a college freshman who has been searching for a 'B' brand backpack online may see an OBA featuring the exact same product at a weather forecasting site after a few hours of searching. Not only is the ad personally relevant and individually tailored, but also it would function as a great solicitor reminding what the consumer needs. However, sometimes OBA may be considered invasive and inappropriate if the products or services described in the ads are considered too personal. No consumer would like an ad showing feminine care products or an ad showing his or her secret summer vacation destination which should be kept private.

As depicted in these examples, the practice of OBA appears to have a 'double-edged sword' effect. On the one hand, this type of ads can provide individual consumers with the most relevant and tailored ad messages by showing them the exact products/services they previously viewed. Consumers would be more likely to be interested in the ad and less likely to be annoyed than they would toward irrelevant, random ad messages. On the other hand, OBA could raise significant privacy concerns among consumers because such ads would likely make consumers be more aware of advertisers' tracking and sharing their online activity data without their authorization.

A recent article published in *The New York Times* well represents consumers' mixed evaluations toward OBA. In this article, Julie Martin, a consumer from Montreal, said that, "For days or weeks, every site I went to seemed to be showing me ads for the shoes I saw on Zappos.com. It is a pretty clever marketing tool. But it's a little creepy, especially if you don't know what's going on" (Helft and Vega 2010).

Despite the growth of OBA in recent years and its unique characteristics raising controversy, little scholarly attention has been paid to OBA, consumer responses to such an advertising form, and factors influencing OBA effects. Research is needed to understand consumer responses to the new forms of personalized advertising based on consumers' online activity history data. This is particularly important given the expected trends in marketing strategies to put increasingly great emphasis on individual consumers' needs and preferences (Watson et al. 2002).

Although there is little research on OBA, findings from previous studies on personalized advertising and a few exploratory OBA studies provide useful insights that can help guide the present study. Those studies, which will be reviewed in later sections, commonly suggest that perceived relevance of and privacy concerns regarding OBA are likely to be the two most important factors influencing consumers' responses to OBA.

Purpose of Study

This study aims to examine: (1) consumers' responses to OBA, with particular focus on two most important perceptual factors – perceived ad relevance and perceived privacy concerns; (2) what role the two perceptual response factors play in OBA effects;

and (3) influencing factors that affect the two types of perceptual responses and moderate their impacts on OBA effects.

Particularly, this study attempts to understand how perceived relevance of and privacy concerns regarding OBA influences consumers' attention to, attitude toward, and clicking on OBA. Consumers' purchase decision involvement is also examined as a possible moderator for the effect of perceived OBA relevance on consumer responses. Then, this study further explores potential influencing factors of the two perceptual variables: 1) perceived personalization of OBA; 2) consumer knowledge about OBA privacy risks; and 3) consumer trust predisposition.

The next chapter will present literature review, starting with background information on personalized marketing communications and emergence of OBA, followed by a review of previous studies on effects of personalized advertising and OBA. Then, the literature on the effects of perceived ad relevance and privacy concerns on consumer responses to personalized advertising will be discussed. The subsequent section will discuss potential influencing factors for two perceptual factors.

CHAPTER 2. LITERATURE REVIEW

Personalized Communication and Emergence of Online Behavioral Advertising

Personalized communication strategies have been frequently used by marketers and advertisers in order to deliver tailored ad messages to the right audiences in a cost efficient way (Jackson, Wang, and Lisa 1994). The concept of personalization has been mainly used in the marketing context, referring to a wide range of marketing communication activities in offering products and services (Baek and Morimoto 2012). In the advertising context, the concept of personalization puts more emphasis on message contents tailored for each unique recipient based on his/her individual preferences or personal information (Baek and Morimoto 2012; White et al. 2008). This type of commercial messages often involves personalized special promotions and product recommendations (Kramer 2007).

As the strategies and techniques in collecting consumer information evolve, a much wider range of consumer information, particularly individual-specific information, has become available for marketers and advertisers. Consumer information available to marketers includes personal identifiers, demographics, lifestyle interest, shopping preferences, and purchase history of identifiable individuals (Nowak and Phelps 1995; Phelps, Nowak, and Ferrell 2000; White et al. 2008). Consumer location information from GPS data has been also available in recent years for mobile advertisers (Unni and Harmon 2007).

Additionally, consumers' online activity history data, which are stored in their web browsers, are now available for marketers and advertisers. According to the Federal Trade Commission Staff Report (2009), online marketers and advertisers are now able to identify what their current and prospective customers are interested in, and have been searching and buying online based on the users' cookie files (<http://www.ftc.gov/os/2009/02/P085400behavadreport.pdf>). The newest form of online personalized advertising that uses such consumer data is called Online Behavioral Advertising (OBA). OBA refers to the advertising practice of tracking consumers' online activities in order to deliver personally tailored messages (FTC 2009).

For example, imagine that a consumer visited Apple's website yesterday to check out new laptop models for his brother's birthday. Today, while reading a news article at *The New York Times* website, he notices a banner ad on the side bar showing the pictures of the exact laptop models he checked out last night. Types of OBA can vary across advertisers, but this type of OBA, which visually reminds consumers of what they have been interested in buying, seems to be most dominant. Consumers can easily notice that the ad messages with images are tailored for them based on their online activity, and that their online product search history has been tracked to create such ads. Unlike the traditional personalized ad messages that are usually based on consumer profile data inferred from the characteristics of different consumer segments (Baek and Morimoto 2012), this new type of behavioral tracking ad offers the highest level of personalization by visually re-showing each unique consumer's interested product.

Although there has been no published study particularly about this recent form of OBA effects, previous literature about personalized advertising effects and few exploratory studies about consumer OBA experience would provide insights regarding consumers' responses to OBA.

Previous Research on Consumer Responses to Personalized Advertising

Several studies have examined positive and negative effects of personalized ad messages and uses of consumers' personal information for ad targeting (Ansari and Mela 2003; Howard and Kerin 2004; Phelps, Nowak, and Ferrell 2000; Sheehan and Hoy 1999; Yu and Cude 2009). Some of the studies focused on examining the positive role of ad personalization in advertising outcomes. Ansari and Mela (2003) tested the effectiveness of permission-based personalized email newsletters and found that the personalized contents of a permission-based personalized newsletter increased click-through rates. Howard and Kerin (2004) also found a similar effect that personalized ad copy using recipients' names increased message response rates.

Another line of research examined privacy concerns caused by consumer data use for personalized advertising. For example, Phelps, Nowak, and Ferrell (2000) conducted a national mail survey to examine potential relationships among beliefs about direct advertising mail, situational characteristics, and privacy concerns. The findings indicated that a majority of consumers (87%) were concerned about the ways companies were using consumers' personal information. The findings also demonstrated that consumers' concerns about companies' use of consumer personal information led to negative attitude toward direct mail.

Personalized advertising tends to be considered less effective if consumers view it as a serious invasion of their privacy (Sheehan and Hoy 1999). In a study of unsolicited personalized email messages, Sheehan and Hoy (1999) found that the study participants' overall privacy concerns led to avoidance of personalized messages. For example, as privacy concern increased, respondents were more likely to notify their Internet Service Providers to remove them from the mailing list or to send a negative message to the online entities in charge. In another survey with 231 young adults, respondents felt advertisers delivering personalized messages violated their privacy, and were worried about what other personal information the advertisers might have (Yu and Cude 2009).

Research on OBA

OBA practice has received much attention and scrutiny by governmental regulatory agencies such as the FTC and consumer organizations due to its nature of potential privacy invasion. However, research on consumers' experience with OBA is scarce. Only a few unpublished studies exist, which conducted exploratory focus groups or telephone interviews examining consumer expectations about and experience with OBA (McDonald and Cranor 2010; Turow et al. 2009; Ur et al. 2012). The findings from these preliminary studies seem to suggest similar insights as the findings from previous studies on personalized advertising effects, which proposed two key perceptual factors influencing personalized advertising effects: perceived ad relevance and privacy concerns of personalization.

McDonald and Cranor (2010) examined consumers' views and knowledge of OBA using in-depth interviews with 14 subjects and an online survey with 314 Amazon

Mechanical Turk participants. Findings from the in-depth interviews suggested that a majority of participants had poor knowledge of the OBA mechanism. They also had false belief that there is a legal protection prohibiting companies from sharing consumer information they collected online. Interestingly, the participants understood OBA as a source of privacy harm in general, but they also showed a pragmatic attitude toward such advertising, with a subset of participants welcoming personalized, therefore relevant, ads. In the subsequent online survey, the data confirmed the findings from the in-depth interviews. Privacy concerns were high among the survey respondents, but 21% of participants answered they wanted the benefits of a personally-relevant ad.

Turow et al. (2009) conducted a national telephone survey with 1,000 U.S. internet users to explore Americans' opinions about behavioral targeting practice and receiving advertisements based on behavioral targeting. The results showed a similar pattern as the findings from McDonald and Cranor (2010); Most adult Americans (66%) did not want marketers to tailor ads to their interests and, particularly, they were worried about others' use of their personal data. However, the results also indicated that participants seemed to be more tolerant about receiving tailored ads with useful discounts or promotions.

Findings from Ur and colleagues' study (2012) also showed consumers' practical attitudes toward OBA. This study conducted in-depth interviews with 24 students and 24 non-student participants, asking their expectations and beliefs about OBA. Participants showed strong concerns about their online behavior data collected by marketers and seemed to be aware of having no control on marketers' use of their personal data.

However, 31 of 48 participants reported that receiving tailored ads of their personal interest would be useful. Additionally, perceived trust toward the advertiser appeared particularly influential in determining consumers' attitudes toward the behavioral tracking practice.

Similar findings are offered in a recent Pew Internet and American Life Project report based on a telephone survey of 2,253 American adults. According to this report, 68% of American internet users were not comfortable with personally-targeted ads because of the behavior tracking practice (Purcell, Brenner, and Rainie 2012). However, 28% of the survey respondents were fine with receiving targeted advertising messages as long as such ads are personally relevant and interesting to them.

In sum, the findings from the previous studies about personalized communication and OBA in particular commonly suggest consumers' mixed attitudes toward personalized advertising. Such mixed attitudes seem to be connected to two contradictory factors: (1) relevance of the ad message and (2) privacy concerns of possible misuse of consumer data. Therefore, this study focuses on these two factors as important influencers of OBA effects. The following sections will discuss them and review relevant literature in depth, leading to specific hypotheses.

Perceived Ad Relevance and Consumer Responses to Advertising

Perceived relevance refers to the degree to which consumers perceive an object to be self-related or in some way to be instrumental in achieving their personal goals and values (Celsi and Olson 1988). Built on this definition, this study defines consumers'

perceived relevance of an OBA as the extent to which consumers perceive an OBA message to be self-related or useful in achieving their shopping goals.

Advertising recipients' perceived relevance of an advertising message has been considered an important factor that influences consumer reactions to the message, and in turn, advertising effectiveness (Drossos and Giaglis 2005; Muehling and McCann 1993). Perceived ad relevance is likely to generate favorable purchase intentions and other desired responses (Pavlou and Steward 2000), and mentioning consumers' specific interests in an ad message can increase consumer interaction with the ad (Rodgers and Thorson 2000).

There are some empirical findings that demonstrate the effects of perceived ad relevance on consumers' attention, attitude, and behavioral responses to advertising. Pechmann and Steward (1990) found that consumers paid closer attention to personally-relevant marketing messages, and Campbell and Wright (2008) found that attitude toward a repetitive online ad was positively influenced by the level of perceived relevance of the ad message. In another study, perceived ad relevance was found positively related to consumers' behavioral intention to accept the ad in the online social networking community context (Zeng, Huang, and Dou 2009). Similarly, in the mobile ad context, perceived relevance of an advertising campaign was found effective in leading the ad recipient to accept text ads in general (Merisavo et al. 2007) and to increase ad recipients' disposition to take responsive actions such as texting back or visiting the website (Rettie, Grandcolas, and Deakins 2005).

In sum, the previous findings suggest that perceived relevance of a personalized ad will likely be positively associated with ad recipients' attention, attitude, and behavioral response to the ad. Applying the same logic to the OBA context, it is expected that similar or even stronger effects of perceived ad relevance would be found on consumer attention, attitude, and behavioral responses, as OBA tends to provide highly tailored individual-specific ad messages based on the target consumer's past online navigation activities.

Then, what specific consumer or situational characteristics would influence the level of perceived ad relevance regarding OBA and moderate its impact on ad effects? The following two sections discuss two potentially important factors playing a role in the relationship between perceived ad relevance and OBA effects: (1) purchase decision involvement as a moderator and (2) perceived ad personalization as an influencing factor of perceived ad relevance.

Influencing Factors of Perceived Ad Relevance

Purchase Decision Involvement

A common definition of involvement is a motivational and goal-directed emotional state that determines an individual's interest in an object (Mittal 1989; Rothschild 1984). In the domain of consumer behavior, Mittal (1989) categorized consumer involvement into two types: (1) product class involvement and (2) purchase decision involvement. Unlike product class involvement, which refers to consumers' general interest in a particular product class (Mittal and Lee 1989), purchase decision involvement refers to "the extent of interest and concern that a consumer brings to bear

upon a purchase decision task” (Mittal 1989, p.150). This type of involvement would likely to be more closely connected to perceived ad relevance of OBA because behavior-tracking ads are typically placed at the time of active product search and purchase decision-making based on consumers’ recent search behaviors. However, purchase decision involvement is not expected to completely dominate the shaping of perceived ad relevance of OBA, but rather likely to function as a moderator in the relationship between perceived relevance of OBA and effects of the ad.

Considering the nature of OBA, which serves as a visual reminder of what consumers have recently checked out or might have already purchased online, consumers’ purchase decision involvement seems to be a critically important influence on the impact of consumers’ perceived ad relevance on advertising effects. Think about a previous scenario where a consumer who has been searching for a laptop computer online encounters a banner ad showing the exact model he had recently clicked on and viewed. At the moment of the ad exposure, the consumer may be still looking to purchase a laptop, or have already purchased one, or have decided not to buy one. In the first situation, the consumer would be in a relatively high purchase decision involvement mode and, therefore, would likely perceive the OBA strongly relevant. Then, the impact of the perceived ad relevance on the ad effects is likely to be stronger. This is because consumers in the buying mode are more likely to be active processors of relative information about what to purchase (Ray 1973). In the latter two situations, however, the consumer would likely be no longer involved in the purchase decision-making regarding

the particular product. Thus, although the product itself and the ad may still feel relevant, the impact of perceived ad relevance on the ad effects would be relatively weaker.

Although there is very limited research that is specifically focused on the role of purchase decision involvement in the personalized advertising context, several studies provide relevant insights. For example, McCullough and Dodge (2002) demonstrated that consumers' level of involvement in purchasing interest influenced consumers' evaluation of ad message elements. Their findings revealed that consumers in a high-involvement state were more influenced by the issue-relevant message than consumers in a low-involvement state. Other studies have also reported similar findings that involvement is a determining factor of whether an ad recipient is personally affected by the ad message and motivated to respond to it (Phelps and Thorson 1991; Zaichkowsky 1985).

Considering that the core definition of the involvement construct refers to the extent to which a consumer views the focal object as an important and meaningful part of his/her life (O'Cass 2000), it is expected that consumers' level of involvement in a particular purchase decision-making would moderate the relationship between perceived ad relevance and advertising outcome variables.

Perceived Personalization

Personalization is broadly defined as the process of using a consumer's information or inferred preferences to deliver an individualized communication to each consumer (Peppers and Rogers 1997). To this definition, Imhoff and colleagues (2001) added different media platforms, including personal messaging, targeted banner ads, special offers on bills, or other personal transactions. In accordance with the definitions

of personalization, Wu (2006) defined perceived personalization in the web communication context as the extent to which a consumer is provided with adequate or personally designed information based on his or her communicative behaviors. Built on these previous definitions, this study defines perceived personalization in the OBA context as the extent to which a consumer perceives an OBA message is specifically tailored based on his or her preferences and needs.

Previous studies have emphasized that perceived personalization is closely associated with advertising relevance for individual recipients (Wehmeyer 2007; Xia and Bechwati 2008) because individual-specific messages are likely to be considered self-related and tailor-made (Back and Morimoto 2012; Xia and Bechwati 2008). In turn, successful targeting and personalization that are based on individual preference could result in increasing ad relevance (Wehmeyer 2007). Reflecting on the conceptual definitions of perceived personalization, it is plausible that the degree to which consumers consider an ad personally tailored would positively influence how they evaluate the ad relevance.

However, ad personalization strategies should be carefully implemented because of the possibility that too much personalization might cause backfire generating consumer concerns about privacy invasion. The negative effects of consumer privacy concerns regarding personalized advertising on their responses to such ads and factors influencing privacy concerns regarding OBA will be discussed in the following section.

Privacy Concerns and Consumer Responses to Advertising

The most effective forms of personalized advertising are created to match the targeted individual consumer's interest and need as closely as possible, and, as a result, tend to generate great privacy concerns regarding potential misuse of consumers' personal information and behavioral data (Baek and Morimoto 2012; Phelps, Nowak, and Ferrell 2000). Therefore, privacy concerns are considered one of the important factors influencing consumer responses to OBA and OBA outcomes.

Privacy has multi-dimensional meaning depending on the context in which it is defined and used. Privacy can be defined to indicate individuals' control and limit of their physical, interactional, psychological, and informational access to the self or their groups (Burgoon et al. 2002), and, more specifically, the subsequent uses of their personal information (Westin 1968). Based on Westin's (1968) definition of privacy, Baek and Morimoto (2012) defined perceived privacy concern in the advertising context as "the degree to which a consumer is worried about the potential invasion of the right to prevent the disclosure of personal information to others" (p.63). Concerns over privacy become activated when individuals recognize the lack of control on their information (Sieber 1998). Considering all, the current study defines privacy concerns in the context of OBA as the degree to which a consumer is worried about the potential misuse of his or her online activity history data collected by advertisers.

Negative influence of consumer privacy concerns on their attitudinal and behavioral reactions to personalized advertising has been examined and proven in previous empirical studies. Privacy concerns have been found to lead to consumers'

negative attitude toward direct marketing (Phelps, D'Souza, and Nowak 2001), purchase behavior, and perceived information control (Milne and Boza 1999). Phelps and colleagues (2001) also demonstrated that higher levels of privacy concerns diminished purchase intention in response to a direct marketing material. Consumers feeling high privacy concerns are also likely to request removal of information or support privacy protection policies (Dolnicar and Jordann 2007).

In the advertising context, consumers with privacy concerns tend to show low tolerance to personalized advertising messages. Consumers with high privacy concerns were likely to show skepticism and ad avoidance toward personalized advertising (Baek and Morimoto 2012). Participants in the Sheehan and Hoy's study (1999) also showed negative behavioral responses to an unsolicited personalized email, such as providing incomplete information to the website sending out the ad email, avoiding further unsolicited messages, and requesting removal from the mailing list.

Regarding the influence of privacy concerns on advertising attention, no previous research offers empirical evidence. However, based on the limited prior literature, it is expected that privacy concerns are likely to increase attention to behaviorally-targeted personalized ads. Reflecting on Baek and Morimoto's (2012) definition of privacy concern, consumers may consider highly personalized ads a threat or risk to their privacy, because such ads are likely to raise the concerns that their right to prevent disclosure of their personal information is being limited. Consumers who consider OBA a severe privacy threat would pay attention to the ad when shown, because a threat that exceeds the critical threshold tends to capture one's attention (Mogg and Bradley 1988).

Limited Capacity Model of Mediated Message Processing (Lang 2006) also suggests that, once an aversive stimulus is detected, human motivation system would allocate much cognitive efforts to decode the potential threat to take an appropriate action. The more the threat is considered to be salient, the more and quickly the cognitive resources will be allocated to encode it. Considering attention refers to the amount of mental or cognitive efforts allocated to a task (Kahneman 1973), it seems plausible that consumers would pay more attention to a highly personalized ad when they perceive it as a privacy risk.

In sum, the previous findings suggest that privacy concerns regarding personalized ads will likely be negatively associated with ad recipients' attitude, and behavioral responses to the ad. However, consumers' privacy concerns regarding personalized ads would be expected to increase their attention to the ad. The same pattern of relationships is expected in the context of OBA.

The following sections discuss two potentially important factors influencing perceived privacy concerns: (1) consumers' knowledge about potential OBA privacy risks and (2) consumers' trust predispositions.

Influencing Factors of Consumer Privacy Concerns

Knowledge of Potential Privacy Risks

Privacy concern, as defined in the previous section, refers to the degree to which a consumer is worried about losing control over their personal data (Sieber 1998) and data disclosure to others (Baek and Morimoto 2012; Rust, Kannan, and Peng 2002). Drawing from the definition, it is inferred that consumers are likely to have concerns regarding

their privacy when they know or believe they lose control over others' access to their personal information (Sieber 1998; Westin 1967).

A study on mobile advertising based on individuals' location data and consumers' privacy concerns offers an insightful finding about the relationship between consumers' awareness of mobile advertisers' collection of consumer data, misuse of such data, and their privacy concerns (Unni and Harom 2007). Compared to those who received a pull location-based ad, consumers who received a push location-based ad showed greater privacy concerns regarding the advertising practice because those consumers were more aware of the lack of their personal information control.

Hence, it is logical to infer that the more individuals are aware of privacy risks (e.g., how their personal data could be collected, misused, and disclosed without their consent), the more they would be concerned about the practice. Particularly, in the personalized advertising context, the recipients who are more knowledgeable about possible privacy invasion risks caused by advertisers' collecting and using consumers' personal data would be likely to have higher levels of privacy concerns regarding such targeting practices.

One relevant study showed an empirical support for this hypothesis. Van Dyke (2007) demonstrated that educating users about how consumer information was gathered to provide personalized Web services significantly increased their privacy concerns. This study revealed that increased user knowledge about the types of personal information collected, information gathering technology, and the potential uses of the information made the users worried about the possible invasion of privacy, and in turn, significantly

reduced the proportion of users who preferred website personalization. Thus, it is predicted that the degree to which consumers are knowledgeable about potential privacy risks of OBA would be positively related to the level of their privacy concerns regarding the advertising practice.

Trust Predispositions

In addition to knowledge of potential privacy invasion risks, trusting predispositions are likely to significantly influence consumers' privacy concerns regarding OBA. Trust has been considered a critical factor in alleviating an individual's concerns regarding uncertainty and risk (McKnight, Choudhury, and Kacmar 2002; Okazaki, Li, and Hirose 2009), and often examined as a mitigating factor for consumer privacy concern in the e-commerce domain (Gefen 2000; Jarvenpaa et al. 1996; Kim, Ferrin, and Rao 2008; Pavlou 2003). Generally, trust is classified into three broad categories: inter-personal trust, institutional (system) trust, and dispositional trust (McKnight, Choudhury, and Kacmar 2002). The present study focuses on examining the effects of 1) dispositional trust as a personality trait and 2) institutional trust as a general perception regarding the online personalized ad practice.

Dispositional trust, or disposition to trust (Kim, Ferrin, and Rao 2008), refers to an individual's personality trait that affects the person's general propensity to be willing to depend on others (McKnight and Chervany 2001/2002). It is a consumer-specific antecedent of trust which is developed based on personality types, cultural backgrounds, or developmental experiences (Kim, Ferrin, and Rao 2008). This personality-based dispositional trust results in a general tendency to trust others (Rotter 1967) and is

considered an important factor determining consumer responses to advertising and other marketing activities (Davis, Sajtos, and Chaudhri 2011; Lee and Turban 2001).

Although dispositional trust has been rarely applied to explaining advertising effects, this concept seems to be effective in decreasing consumers' feeling of uncertainty and worries about potential invasion of privacy caused by personalized advertising practices. It is because consumers with high dispositional trust would likely be less critical and more tolerant of the possible mistakes or risks caused by others (Davis, Sajtos, and Chaudhri 2011), which could be expected to happen with respect to online advertisers' collection and use of consumers' personal information. The role of dispositional trust in shaping consumers' privacy concerns regarding OBA in particular would likely be even more significant as OBA is a relatively new advertising format. Therefore, consumers' perceived uncertainty about OBA would be higher than in the case of other more well-known advertising forms (McKnight, Cummings, and Chervany 1998)

Another dimension of trust this study considers important as a mitigating factor of privacy concerns is institutional trust. Institutional trust refers to one's trust in the structure or system that supports trust formation by enabling the trusting one to act properly in order for a success in a given situation (McKnight, Cummings, and Chervany 1998). This type of trust reflects one's state of mind about a situation based on feeling of guarantees, safety nets, or other structures (Shapiro 1987). The effect of institutional trust on reducing consumers' risk perceptions has been examined in the Web service structure (Lee and Turban 2001) and mobile marketing practices (Jayawardhena et al. 2009).

Jayawardhena et al. (2009) found that higher levels of institutional trust reduced consumers' concerns about the mobile service providers in question and unknown institutional regulation. Institutional trust would likely play an important role in reducing consumers' privacy concerns regarding OBA because it helps consumers develop positive perception toward an emerging industry by reducing uncertainties about the new system or structure (Jayawardhena et al. 2009).

In sum, considering that privacy concerns regarding personalized advertising are related to the fear of potential harm and risks caused by online advertisers in relation to their collection and use of consumers' personal information (Baek and Morimoto 2012; Rust, Kannan, and Peng 2002; Sieber 1998), individual consumers' trusting predispositions (dispositional trust and institutional trust) are likely to mitigate privacy concerns regarding OBA. Individuals with higher propensity to trust others in general would likely to have lower levels of concerns associated with potential privacy threats and risks caused by OBA. Likewise, higher levels of trust in online marketing practices would likely lead to lower privacy concerns about online advertisers' consumer behavioral tracking and OBA.

CHAPTER 3. HYPOTHESES

The review of relevant literature on personalized advertising and OBA guides this study to pose hypotheses for the effects of two perceptual factors (perceived ad relevance and privacy concerns regarding OBA) on consumers' cognitive, attitudinal, and behavioral responses to OBA.

Effects of Perceived Ad Relevance on Consumer Responses to OBA

Previous literature has demonstrated that perceived ad relevance leads to heightened attention to the ad (Pechmann and Steward 1990), positively influences attitude toward the ad (Campbell and Wright 2008), and generates positive behavioral intentions in accepting the ad (Merisavo et al. 2007; Zeng, Huang, and Dou 2009), because consumers consider relevant messages to be more self-related and useful in achieving their goals (Celsi and Olson 1988). These positive relationships between perceived ad relevance and ad responses are expected to be observed in the OBA context. Thus, the following hypotheses are proposed.

H1a: Consumers' perceived relevance of an OBA would be positively related to their attention to the ad.

H1b: Consumers' perceived relevance of an OBA would be positively related to their attitude toward the ad.

H1c: Consumers' perceived relevance of an OBA would be positively related to their behavioral response to the ad.

Moderating Effect of Purchase Decision Involvement

Purchase decision involvement would likely be closely connected to perceived ad relevance of OBA and moderate the relationship between perceived ad relevance and ad effects. Behavior-tracking ads are typically placed at the time of active product search and purchase decision-making, and the extent to which perceived relevance of an OBA influences a consumer's responses to the ad would be influenced by the consumer's purchase involvement at the moment of the ad exposure (McCullough and Dodge 2002; Phelps and Thorson 1991; Zaichkowsky 1985). Thus, this study predicts that:

H2a: The relationship between perceived relevance of an OBA and attention to the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.

H2b: The relationship between perceived relevance of an OBA and attitude toward the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.

H2c: The relationship between perceived relevance of an OBA and behavioral response to the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.

Perceived Personalization as an Influencing Factor for Perceived Ad Relevance

Previous research findings suggest that individual-specific messages are likely to be considered self-related and tailor-made (Back and Morimoto 2012; Xia and Bechwati 2008), and, in turn, could result in increasing ad relevance (Wehmeyer 2007). Thus, a

positive relationship between perceived personalization of an ad and perceived ad relevance is expected.

H3: The level of perceived personalization of an OBA would be positively related to consumers' perceived relevance of the ad.

Effects of Privacy Concerns on Consumer Responses to OBA

Although the benefit of personalization is providing each consumer with a highly tailored message, this strategy comes with the potential risk of raising privacy concerns regarding the collection and misuse of consumer data by advertisers (Baek and Morimoto 2012; Phelps, Nowak, and Ferrell 2000). Privacy concerns have been found to lead to consumers' negative attitude toward direct marketing (Phelps, D'Souza, and Nowak 2001) and ad skepticism and avoidance toward personalized messages (Baek and Morimoto 2012). High levels of privacy concerns also diminish purchase intention (Phelps, D'Souza, and Nowak 2001).

Among personalized communication strategies, OBA may raise the greatest privacy concern as it tracks consumers' online searching and browsing history and offers fine-tailored ad messages based on that. Thus, this study poses the following hypotheses.

H4a: Consumers' privacy concerns regarding OBA would be negatively related to their attitude toward the ad.

H4b: Consumers' privacy concerns regarding OBA would be negatively related to their behavioral response to the ad.

When it comes to attention to the ad, this study expects that privacy concerns regarding OBA would increase consumers' attention to the ad. Consumers may consider

an extremely personalized and tailored ad a threat or risk to their privacy, and the perceived privacy threat may enhance their attention to the ad when it exceeds a critical threshold (Lang 2006; Mogg and Bradley 1988). Thus, the following hypothesis is posed.

H4c: Consumers' privacy concerns regarding OBA would be positively related to their attention to the ad.

Privacy Risk Knowledge as an Influencing Factor for Privacy Concerns

Consumers' concerns over privacy manifest when they recognize lack of control over others' access to their personal data or information (Sieber 1998; Westin 1967). The more individuals know how their personal data could be collected, misused, and disclosed by online advertisers, the greater their privacy concerns would be regarding the practice. Van Dyke (2007) empirically demonstrated that educating users about the types of information collected, information gathering technology, and the potential uses of the information to offer personalized Web services significantly increased the level of privacy concerns.

Previous studies on consumer knowledge and information processing have found that subjective knowledge, objective knowledge, and prior experience generate different influences on information processing (Brucks 1985; Park, Mothersbaugh, and Feick 1994). Other studies have also emphasized the importance of examining both subjective and objective knowledge to better understand the relationship between consumer knowledge and behavior (Spreng and Olshavsky 1990).

In accordance with the suggestions, this study tests two different types of knowledge about consumer privacy risks. Based on the definitions from Brucks (1985)

and Flynn and Goldsmith (1999), subjective knowledge in this study context is defined as the degree to which consumers perceive themselves knowledgeable about potential privacy risks of OBA, and objective knowledge as the degree to which consumers actually know about the potential privacy risks of OBA. The following two hypotheses are posed:

H5a: Consumers' subjective knowledge about potential OBA privacy risks would be positively related to their privacy concerns regarding OBA.

H5b: Consumers' objective knowledge about potential OBA privacy risks would be positively related to their privacy concerns regarding OBA.

Trust Predisposition as an Influencing Factor for Privacy Concerns

Trust has been considered a critical factor in alleviating individuals' concerns regarding uncertainty and risk (McKnight, Choudhury, and Kacmar 2002; Okazaki, Li, and Hirose 2009). This study focuses on examining the effects of 1) dispositional trust as a personality trait and 2) institutional trust as a general perception regarding online personalized marketing practice. Based on the literature on the role of dispositional trust and institutional trust in shaping consumers' responses to websites and e-commerce entities (e.g., Davis, Sajtos, and Chaudhri 2011; Jayawardhena et al. 2009; Lee and Turban 2001; Shapiro 1987), the following hypotheses are posed:

H6a: Consumers' trust disposition would be negatively related to their privacy concerns regarding OBA.

H6b: Consumers' trust in online marketing practices would be negatively related to their privacy concerns regarding OBA.

CHAPTER 4. METHOD

To test aforementioned hypotheses, an online survey was conducted with a sample of American consumers taken from the Amazon Mechanical Turk (MTurk). MTurk is an integrated online participation system and provides a large participation pool for researchers to access to potential study subjects (Mason and Suri 2012). Participants who wish to take part in a study are asked to voluntarily sign up.

This sampling approach was purposefully chosen for two reasons. First, the survey participants must be Internet users in order to have prior experience with OBA. Second, MTurk is becoming popular as a participant recruitment resource among researchers and developers because of its relative diversity in demographics, which offers a clear advantage over using undergraduate student samples in terms of external validity of study findings (Mason and Suri 2012).

Researchers in social science have found that MTurk participants are slightly more demographically diverse than are standard Internet samples as well as typical American college samples (Buhrmester, Kwang, and Gosling 2011) particularly in terms of age, ethnicity, and socio-economic status (Mason and Suri 2012). However, the MTurk population is still considered somewhat limited in representing the entire U.S. population, because it includes more female, younger, and highly educated individuals than the U.S. population (Ross et al. 2010).

Sample

This study used a volunteer sample of American adult internet users recruited from MTurk. The sample inclusion criteria were: (1) adult internet users (18 years or older) (2) who have seen OBA in the past 6 months. Those with no prior exposure to OBA were excluded from the beginning of the survey through a screening question. Out of 348 MTurk users who voluntarily signed up for this study, 304 indicated having seen OBA in the past 6 months and filled out the questionnaire. Respondents were given a dollar of monetary compensation in exchange for their participation.

Data Collection Procedure

The online survey was created on SurveyMonkey, and the survey link was distributed through the MTurk. Participants were allowed to complete the online questionnaire at anywhere internet-accessible. Once participants voluntarily signed up, a consent form was presented to the subjects on the first page of the online survey site. For those who agreed to participate, a screening question was presented on the next page in order to exclude participants who have not seen OBA in the past 6 months.

Right before this question, a clear definition of OBA with examples was presented: “Online Behavioral Advertising is a form of online advertising strategy, which tracks consumers’ online activities over time – including the searches the consumer has conducted, the web pages visited, and the content viewed. In this study, we are examining one major type of Online Behavioral Advertising: An online banner ad that exactly re-shows the specific products/services you have recently clicked on and viewed online or features the specific brands of online stores you have recently visited.”

Only those participants who answered they had seen OBA in the past 6 months were asked to complete the questionnaire. The entire survey took approximately 15 minutes to complete.

Questionnaire and Measures

This study adopted previously established measurements from the existing studies, and the researcher modified the question wording of some measurements to make them more suitable for this study's context. The questionnaire included measures for: privacy concerns regarding OBA, knowledge of OBA privacy risks, perceived ad relevance, purchase decision involvement, perceived ad personalization, dispositional trust, institutional trust in online marketing practices, attention to the ad, attitude toward the ad, and behavioral response to the ad.

Privacy Concerns regarding OBA

Three 7-point scale items from Dinev and Hart (2006) measured privacy concerns by asking the respondents to what extent they would agree or disagree with each of the following statements (1=strongly disagree, 7=strongly agree): (1) I get concerned that my online activity history could be misused; (2) I get concerned about what others might do with my online activity history data; and (3) I get concerned that my online activity history could be used in a way I did not foresee.

Knowledge of OBA Privacy Risks

Subjective knowledge of potential OBA privacy risks was measured by four 7-point semantic differential scales taken from Burton and Netemeyer (1992) and Flynn and Goldsmith (1999). Respondents were asked: (1) To what extent are you aware of

potential privacy risks of Online Behavioral Advertising? (Know nothing – Know a lot); (2) To what extent are you knowledgeable about potential privacy risks of Online Behavioral Advertising? (Not knowledgeable at all – Very knowledgeable); (3) To what extent are you familiar with potential privacy risks of Online Behavioral Advertising? (Not familiar at all – Very familiar); and (4) Compared to other consumers, do you feel that you're more, less, or similarly informed about potential privacy risks of Online Behavioral Advertising? (Much less informed – Much more informed).

Prior literature suggests that actual (or objective) consumer knowledge is best measured by testing individuals' factual knowledge of an issue (Alba and Hutchinson 1987; Brucks 1985). Following this suggestion, the measurement of objective knowledge about potential privacy risks of OBA consisted of seven true-false questions developed by the researcher. The questions included facts regarding the potential risks of consumer data security, privacy issues, and consumer rights when receiving OBA, developed based on information taken from the FTC staff report (2009) (<http://www.ftc.gov/os/2009/02/P085400behavadreport.pdf>) and Network Advertising Initiative (<http://www.networkadvertising.org/>) website.

Participants were asked to answer if each of the following statements is true or false by choosing one of the three options (True, False, or Don't know): (1) Most online behavioral ads primarily use personally identifiable information (e.g., name, address, telephone number, credit card information, etc.) to provide consumers with tailored messages; (2) Consumer consent is not necessary when online advertisers track consumers' online activities; (3) Consumers can choose to opt-out to stop advertisers

from collecting their online activity history; (4) Consumers can choose to select the type of online activity history data that can be collected by advertisers; (5) Consumers' online activity history data (e.g., what they have searched and viewed, where they have visited, etc.) stored in their internet browser can be sold to online advertisers; (6) If a website shows online behavioral ads, that means the site is tracking consumers' online activity history; and (7) There is a federal law regulating online marketers' tracking of consumer online activities.

Perceived Ad Relevance

Perceived relevance of an OBA was measured for a specific ad each respondent most recently saw, with 7-point scales with 10 items (1=strongly disagree, 7=strongly agree). Before asking this question and other ad-response questions, the respondents were asked to recall one specific OBA they most recently saw. Staying focused on the ad they recalled, participants were asked to evaluate their attention, attitude, and behavioral response to the specific OBA, perceived personalization of the ad, perceived relevance of the ad, and purchase decision involvement when encountering the ad.

The perceived ad relevance measurement was taken from Laczniak and Muehling (1993). Respondents were asked to rate how they felt about the OBA they recently saw on the following ten attributes: (1) Important to me; (2) Meaningful to me; (3) Created just for me; (4) Worth remembering; (5) Of value to me; (6) Relevant to my needs; (7) Useful to me; (8) Worth paying attention to; (9) Interesting to me; and (10) Likely to give me new ideas.

Purchase Decision Involvement

This study borrowed the three-item Purchase Decision Involvement measurement from Mittal (1995). The measurement includes three 7-point semantic differential scales: (1) In selecting from many types and brands of the product available in the market, to what extent did you care as to which one you should buy? (I did not care at all which one I should buy - I cared great deal which one I should buy); (2) How important was it for you to make a right choice of the product? (Not at all important - Extremely important); and (3) In making your selection of the product, how concerned were you about the outcome of your choice? (Not at all concerned - Very much concerned).

Perceived Ad Personalization

Perceived personalization of an OBA was measured by 7-point Likert scales with five items taken from Srinivasan, Anderson, and Ponnaolu (2002). Respondents were asked to indicate how much they agree with each of the following statements (1=strongly disagree, 7=strongly agree): (1) The ad I saw made purchase recommendations that match my needs at that time; (2) The ad I saw enabled me to order a product tailored for me; (3) The ad I saw was tailored to my shopping situation at that time; (4) The ad I saw made me feel that I am a unique customer; and (5) I believe that the ad I saw was customized to my needs.

Attention to the Ad

Attention to the ad was measured by a 7-point semantic differential scale (Duncan and Nelson 1985). Respondents were asked how much attention they paid to the ad they recently saw (No attention at all - A lot of attention).

Attitude toward the Ad

Attitude toward the ad was measured by four 7-point semantic differential scales taken from Muehling (1987). The attitude items included: (1) bad – good; (2) harmful – beneficial; (3) not useful – useful; and (4) uninformative – informative.

Behavioral Response to the Ad

Behavioral response to the ad was measured by a single yes/no question by asking the respondents whether or not they clicked on the ad they recently saw.

Dispositional Trust

Dispositional trust was measured by four 7-point scales (1=strongly disagree, 7=strongly agree) taken from Lee and Turban (2001). The four statements include: (1) It is easy for me to trust a person/thing; (2) My tendency to trust a person/thing is high; (3) I tend to trust a person/thing, even though I have little knowledge of it; and (4) Trusting someone or something is not difficult.

Institutional Trust in Online Marketing Practices

Four 7-point scale items taken from McKnight, Choudhury, and Kacmar (2002) measured institutional trust in current online marketing practices. Respondents were asked to indicate how much they agree or disagree with each following statements (1=strongly disagree, 7=strongly agree): (1) The current online marketing practices offer enough safeguards to make me feel comfortable about personalized marketing messages; (2) I feel assured that legal and technological structures of online marketing adequately protect me from problems associated with personalized marketing messages online; (3) I feel confident that encryption and other technological advances of current online

marketing practices make it safe for me to interact with personalized marketing messages; and (4) In general, current online marketing practices provide a robust and safe environment for consumers.

Control Variables and Demographics

Five control variables were included at the end of the questionnaire, including OBA exposure frequency, time spent online, online product search frequency, attitude toward personalized advertising in general, and internet competency.

OBA exposure frequency was measured by asking the respondents how often they have seen OBA on a typical day using the each following option: (1) Never or almost never; (2) Once; (3) Twice; (4) Three Times; and (5) More than three times. Time spent online was measured by asking the subjects how many hours they spend using the Internet for non-work purposes on a typical day. Online product search frequency was measured by asking the subjects how many times they search for products/services online in a typical week.

Attitude toward personalized advertising in general (e.g., unsolicited commercial e-mail, postal direct mail, telemarketing, and advertising text messaging) was measured with four 7-point scales taken from Muehling (1987). The items included: (1) bad – good; (2) harmful – beneficial; (3) not useful – useful; and (4) uninformative – informative. Internet competency was measured by 7-point scales (1=strongly disagree, 7=strongly agree) with three items including: (1) I am skilled at using the Internet; (2) I consider myself knowledgeable about the Internet; and (3) I know how to find what I am looking

for on the Internet (Cho and Cheon 2005). For demographics, gender, age, education, and household income were measured.

Questionnaire Pre-test

The questionnaire was pre-tested twice, once at the earlier stage of the measurement development and again at the final stage. The first pre-test was performed with an earlier version of the questionnaire through a series of in-depth interviews. Total nine subjects, composed of three undergraduate students, four graduate students, and two non-students, participated. For each in-depth interview, the informant was asked to review and evaluate the clarity of the definition of OBA, descriptions, and wording used in the questionnaire. Particularly, participants were asked to evaluate the effectiveness of the screening question designed to exclude those without prior OBA exposure experience. They were also asked to describe their expectation, experience, and any behavioral response regarding OBA they recently saw. The information from these in-depth interviews was used for refining and further developing the questionnaire.

After the final version of the questionnaire was completed, it was pre-tested again with a sample of 60 MTurk users. From this pre-test, no questions or confusion arose and no problem was detected.

CHAPTER 5. RESULTS

Characteristics of Participants

After removing incomplete or unusable cases, a total of 292 usable questionnaires were collected. The average age of the respondents was 33.64 years old ($SD = 12.04$), ranging from 18 to 67 years. The gender distribution was reasonably balanced with 52.4% male and 47.6% female. In terms of education, a majority of the participants was college graduate (34.5%) or had some college education (34.1%). About 43% of the sample reported earning more than \$50,000 household income per year before taxes.

On a typical day, participants spent approximately 4.25 hours on average using the internet for non-work purposes, and the median number of OBA exposure frequency was about 2 times a day. On average, they searched for products/services online about 12.02 times in a typical week. Participants rated their internet skill level as very high ($M = 6.23$; $SD = .88$) on a 7-point scale. They rated their attitude toward personalized advertising in general as approximately neutral ($M = 3.56$; $SD = 1.54$) on a 7-point scale.

Variable Construction and Reliability Tests

For the measurement scales composed of multiple-items, this study created summated scores for each variable by averaging scores of the multiple items. The summated variables and their Cronbach's alpha coefficients are as follows: privacy concerns regarding OBA (.95), subjective knowledge of OBA privacy risks (.92), dispositional trust (.94), institutional trust in online marketing practices (.94), perceived ad relevance (.95), perceived ad personalization (.91), purchase decision involvement

(.88), attitude toward the ad (.86), attitude toward personalized advertising in general (.93), and internet competency (.92). All Cronbach's alpha scores indicate acceptable measurement reliability.

In addition, a score was computed for objective knowledge of OBA privacy risks by counting the number of correct answers. The possible maximum score was 7, and the actual scores ranged from 0 to 6, with a mean score of 3.13.

Descriptive Statistics for Key Variables

Descriptive statistics of key variables were examined and the results are presented in Table 1. The mean score of privacy concerns ($M = 5.65$) indicates that the survey participants were somewhat strongly concerned about privacy risks regarding OBA. However, the level of knowledge about potential privacy risks of OBA was not high. On average, the survey respondents perceived themselves moderately knowledgeable about OBA privacy risks ($M = 4.03$) and their actual knowledge about privacy risks seemed to be even lower, indicated by the mean objective knowledge score of 3.13 when the possible maximum score could be 7.

In terms of trusting predisposition characteristics, the mean scores of both dispositional and institutional trust fell below the mid-point (4) of the 7-point scale. These mean scores suggest the survey respondents tend to somewhat distrust others in general and the current online marketing practices.

When it comes to responses to the specific OBA they most recently saw, the respondents rated their purchase decision involvement regarding the advertised product somewhat high ($M = 5.48$). However, the respondents did not seem to perceive the OBA

they recently saw to be particularly personalized ($M = 3.43$) or personally relevant ($M = 3.23$). Their attention to the ad ($M = 3.43$) and attitude toward the ad ($M = 3.84$) were also lower than the mid-point of the 7-point scale. In line with these findings, only one in 10 respondents clicked on the ad.

TABLE 1
Descriptive Statistics for Key Variables (N = 292)

Variables	M	SD
Privacy concerns regarding OBA	5.65	1.41
Subjective knowledge of OBA privacy risks	4.03	1.43
Objective knowledge of OBA privacy risks	3.13	1.55
Dispositional trust	3.70	1.45
Institutional trust in online marketing practices	3.25	1.40
Perceived ad relevance	3.23	1.40
Perceived ad personalization	3.43	1.46
Purchase decision involvement	5.48	1.30
Attention to the ad	3.48	1.77
Attitude toward the ad	3.84	1.31
	n	%
Clicking on the ad	25	10.4%

Results by Hypotheses

H1: Effects of Perceived Ad Relevance on Consumer Responses to OBA

Hypothesis 1 predicted how consumers' perceived relevance of an OBA would influence their responses to the ad, which include 1) attention to the ad (H1a), 2) attitude toward the ad (H1b), and 3) behavioral response to the ad (H1c). Particularly, hypothesis 1a predicted that consumers' perceived relevance of a specific OBA they recently saw would be positively related to attention to the ad. To test this hypothesis, a zero-order correlation was conducted, and the result revealed that consumers' perceived ad relevance was positively associated with their attention to the ad ($r = .59, p < .01$). That means, consumers who feel higher levels of ad relevance are likely to pay more attention to the ad. Thus H1a was supported.

A hierarchical regression analysis was conducted in order to further examine whether the statistically significant association found in the correlation still holds after controlling for control variables and demographics. Control variables and demographics were entered in the first block using the stepwise method, perceived ad relevance was entered in the second block using the enter method, and attention to the ad was entered as the dependent variable.

The results presented in Table 2 show that perceived ad relevance remained a significant predictor of attention to the ad after controlling for consumers' demographics and other control variables. While Model 1 revealed attitude toward personalized advertising in general as a significant predictor of attention to the ad, when perceived ad relevance was entered in the second block, it became non-significant. Model 2 shows

significant improvement over Model 1 in the total variance explained by the regression model (adjusted R^2 change from 24% to 35%). The results suggest that perceived ad relevance exerts significant influence on attention to the ad. This result offers further support for H1a.

TABLE 2
Hierarchical Regression for Perceived Ad Relevance Predicting Attention to the Ad
(N = 274)

Predictors	Model 1 (w/o the main predictor)	Model 2 (w/ the main predictor)
Attitude toward personalized advertising in general	.49**	.13
Perceived ad relevance		.50**
Adjusted R^2	.24	.35**
Model Statistics	$F(1,272)=86.08;$ $MS=207.23; p<.01$	$F(2,271)=73.84;$ $MS=152.03; p<.01$

*Note: ** $p<.01$.*

The same zero-order correlation was conducted to test hypothesis 1b, which predicted perceived ad relevance would have positive correlation with attitude toward the ad. The result showed support for H1b as well ($r = .76; p < .01$), indicating a strong positive association between consumers' perceived ad relevance and their attitude toward the ad they saw.

A hierarchical regression analysis was also conducted to further examine the relationship between perceived ad relevance and attitude toward the ad. Control variables and demographics were entered in the first block using the stepwise method, perceived ad relevance was entered in the second block using the enter method, and attitude toward the

ad was entered as the dependent variable. As Table 3 presents, the results show that perceived ad relevance still remained a significant predictor of attitude toward the ad even after controlling for consumer demographics and other control variables.

Among the five control variables and four demographics, attitude toward personalized advertising in general and gender (being female) were found to be positively related to attitude toward the ad, explaining 55% of the total variance. However, when the second block variable – perceived ad relevance – was entered, this variable emerged as a stronger predictor, significantly improving the explanatory power of the regression model (adjusted R^2 from 55% to 65%). The results suggest that, while women and those with more positive attitude toward personalized advertising in general are likely to have more positive attitude toward an OBA, perceived ad relevance seems to exert more influential power over consumers' ad attitude.

TABLE 3
Hierarchical Regression for Perceived Ad Relevance Predicting Attitude toward the Ad (N = 274)

Predictors	Model 1 (w/o the main predictor)	Model 2 (w/ the main predictor)
Attitude toward personalized advertising in general	.73**	.39**
Gender	.12**	.11**
Perceived ad relevance		.47**
Adjusted R^2	.55	.65**
Model Statistics	$F(2,271)=164.23$; $MS=127.27$; $p<.01$	$F(3,270)=166.88$; $MS=100.59$; $p<.01$

Notes: Gender was coded as 1=male, 2=female; ** $p<.01$.

Hypothesis 1c predicted that perceived ad relevance would be positively associated with behavioral response to the ad. To test this hypothesis, a logistic regression analysis was performed, with perceived ad relevance as the sole predictor and clicking on the ad as the dependent variable. As presented in Table 4, perceived ad relevance was significantly and positively related to whether or not a respondent clicked on the ad. In other words, the respondents who perceived higher levels of ad relevance were more likely to click on the ad. Thus, H1c was supported.

TABLE 4
Logistic Regression Analysis for Perceived Ad Relevance Predicting Behavioral Response to OBA (N = 279)

Predictor	B	SE	Wald	Exp(B)	<i>p</i>
Perceived ad relevance	.103	.20	27.80	2.80	.00
Model Statistic	-2LL=146.36; $\chi^2=39.83$; $df=1$; $p<.01$				

A follow-up hierarchical logistic regression analysis was conducted to further test the relationship between perceived ad relevance and clicking on the ad, while controlling for consumer demographics and other control variables. Control variables and demographics were entered in the first block using the forward Wald method, perceived ad relevance was entered in the second block using the enter method, and clicking on the ad was entered as the dependent variable. Table 5 presents the result.

TABLE 5
Hierarchical Logistic Regression Analysis for Predicting Behavioral Response to OBA (N = 279)

Predictors	Model 1 (w/o the main predictor)				Model 2 (w/ the main predictor)			
	B	SE	Wald	Exp (B)	B	SE	Wald	Exp (B)
OBA exposure frequency	-.39**	.19	4.15	.68	-.38	.20	3.66	.68
Online product search frequency	.04**	.01	10.53	1.04	.04**	.01	8.76	1.04
Attitude toward personalized advertising in general	.91**	.20	23.12	2.51	.16	.27	.35	1.18
Internet competency	-1.06**	.24	18.84	.35	-.99**	.25	15.83	.37
Perceived ad relevance					1.11**	.33	11.01	3.03
Cox & Snell R ²	.18				.21			
Model Statistic	-2LL=132.30; $\chi^2=52.770$; df=4; p<.01				-2LL=119.10; $\chi^2=66.01$; df=5; p<.01			

Note: ** $p < .01$.

The results showed that perceived ad relevance still remained a significant predictor of behavioral response to the ad even after controlling for consumer demographics and other control variables. Model 1 revealed that OBA exposure frequency and internet competency were negatively related to clicking on the ad, while online product search frequency and attitude toward personalized advertising in general were positively related to clicking on the ad. However, when the second block variable –

perceived ad relevance – was entered, this variable emerged as a stronger predictor. Model 2 slightly improved the explanatory power of the regression model from 18% to 21%, rendering OBA exposure frequency and attitude toward personalized advertising in general non-significant. The results suggest that, while those who frequently search for products online and have lower internet skills are more likely to click on OBA, perceived ad relevance seems to exert more influential power over consumers' clicking on the ad.

In sum, hypothesis 1 was generally supported and the results suggest that consumers who perceived an OBA more relevant to themselves are likely to pay more attention to the ad, positively evaluate the ad, and click on the ad.

H2: Moderating Effect of Purchase Decision Involvement

Hypothesis 2 predicted that the positive relationships between perceived ad relevance and consumers' attention (H2a), attitude (H2b), and behavioral response (H2c) to the ad would be moderated by the level of purchase decision involvement for the advertised product.

Specifically, H2a tests the moderating effect of purchase decision involvement on the relationship between perceived ad relevance and attention to the ad. A regression analysis was conducted to test this hypothesis. The predictor variables included perceived ad relevance, purchase decision involvement, and the interaction term (perceived ad relevance x purchase decision involvement). Attention to the ad was entered as the dependent variable. Similarly, H2b tests the moderating effect of purchase decision involvement on the correlation between perceived ad relevance and attitude toward the ad. The same variables used in testing H2a were entered as the independent variables and

attitude toward the ad was entered as the dependent variable. The results for H2a and H2b are presented in Table 6.

TABLE 6
Regression Analysis for Testing Moderating Effect of Purchase Decision Involvement (N = 279)

Predictors	Attention to the ad	Attitude toward the ad
PR	1.23**	.50**
PDI	.27	-.08
PR x PDI	-.09	.03
Adjusted R ²	.34	.58
Model Statistics	$F(3,275)=49.39; MS=101.97$ $p<.01$	$F(3,275)=128.31; MS=92.89$ $p<.01$

Notes: PR = perceived ad relevance; PDI = purchase decision involvement; ** $p < .01$.

For both H2a and H2b, no significant interaction effect was found between perceived ad relevance and purchase decision involvement on consumers' responses to the ad. The only significant predictor in both regression results was perceived ad relevance. Therefore, the moderating effect hypothesis was not supported for both H2a and H2b.

H2c was posed to test whether the level of purchase decision involvement would strengthen the relationship between perceived ad relevance and consumers' clicking on the ad. A logistic regression analysis was conducted. The three independent variables used in testing H2a and H2b were entered, and clicking on the ad was entered as the dependent variable. As presented in Table 7, no significant interaction effect was found

between perceived ad relevance and purchase decision involvement on consumers' clicking on the ad. Therefore, the moderating effect hypothesis was not supported for H2c either.

TABLE 7
Logistic Regression Analysis for Testing Moderating Effect of Purchase Decision Involvement (N = 279)

Predictors	B	SE	Wald	Exp(B)
PR	1.33	.83	2.55	3.77
PDI	-.12	.64	.03	.89
PR x PDI	-.04	.15	.07	.79
Cox & Snell R ²	.14			
Model Statistic	-2LL=143.85; $\chi^2=42.33$; $df=3$; $p<.01$			

In sum, H2a, H2b, and H2c were not supported, suggesting that purchase decision involvement is not a significant moderator in the relationship between perceived ad relevance and consumers' responses to OBA.

H3: Perceived Personalization as an Influencing Factor of Perceived Ad Relevance

Hypothesis 3 was posed to test the effect of perceived personalization of an OBA on perceived relevance of the ad. To test this hypothesis, a zero-order correlation was conducted with perceived ad relevance and perceived personalization of the ad. The result revealed a strong positive correlation between the two variables ($r = .73, p < .01$), indicating that the recipients with high levels of perceived ad personalization are more likely to perceive the ad relevant to them. Therefore, H3 was supported.

A hierarchical regression analysis was also conducted to further test the hypothesis. Control variables and demographics were entered in the first block using the stepwise method, perceived ad personalization was entered in the second block using the enter method, and perceived ad relevance was entered as the dependent variable. The results show that perceived ad personalization still remained a significant predictor of perceived ad relevance even after controlling for consumer demographics and other control variables. Table 8 presents the results.

TABLE 8
Hierarchical Regression for Perceived Personalization Predicting Perceived Ad Relevance (N = 271)

Predictors	Model 1 (w/o the main predictor)	Model 2 (w/ the main predictor)
Attitude toward personalized advertising in general	.74**	.47**
Internet competency	-.09*	-.04
Perceived ad personalization		.44**
Adjusted R ²	.55	.66**
Model Statistics	<i>F</i> (2,268)=163.10; <i>MS</i> =145.01; <i>p</i> <.01	<i>F</i> (3,267)=178.18; <i>MS</i> =117.45; <i>p</i> <.01

Notes: **p* < .05; ***p* < .01.

Model 1 shows that attitude toward personalized advertising in general was positively related to perceived ad relevance, while internet competency was negatively related. However, in Model 2, perceived ad personalization emerged as an additional significant predictor, and internet competency became non-significant. Model 2 including

perceived ad personalization significantly improved the explanatory power of the regression model (adjusted R^2 from 55% to 65%). The results suggest that, while those with more positive attitude toward personalized advertising in general are more likely to perceive OBA relevant to them, perceived ad personalization also seems to exert influential power over consumers' perceived ad relevance.

H4: Effect of Privacy Concerns regarding OBA on Consumer Responses to OBA

Hypothesis 4 tests how consumers' privacy concerns regarding OBA would influence their responses to an OBA. Particularly, the relationships between privacy concerns regarding OBA and 1) recipients' attitude toward the ad (H4a), 2) behavioral response to the ad (H4b), and 3) attention to the ad (H4c) were examined.

Hypothesis 4a predicted that consumers' privacy concerns regarding OBA would be negatively related to their attitude toward the ad. To test this hypothesis, a zero-order correlation was conducted with privacy concerns regarding OBA and attitude toward the ad. The result showed a weak to moderate, negative correlation between the two variables, indicating that consumers with higher privacy concerns regarding OBA were likely to have more negative attitude toward the ad ($r = -.33, p < .01$). Therefore, H4a was supported.

To further test this relationship, a follow-up hierarchical regression was conducted with control variables and demographics entered in the first block using the stepwise method and privacy concerns regarding OBA entered in the second block using the enter method. Attitude toward the ad was entered as the dependent variable. The result presented in Table 9 indicated that, even after controlling for consumer

demographics and other control variables, privacy concerns still remained a significant predictor of the dependent variable. Among the five control variables and four demographics, attitude toward personalized advertising in general and gender (being female) were found to be positively related to attitude toward the ad, explaining 55% of the total variance. When privacy concerns was entered in Model 2, it was also found to be a significant predictor, but only slightly improving the explanatory power of the regression model (adjusted R^2 from 50% to 51%). The results suggest that, while privacy concerns regarding OBA influence consumers' attitude toward the ad, it may play a less important role in predicting consumers' attitude toward the ad than does general attitude toward personalized advertising.

TABLE 9
Hierarchical Regression for Privacy Concerns Predicting Attitude toward the Ad
(N = 274)

Predictors	Model 1 (w/o the main predictor)	Model 2 (w/ the main predictor)
Attitude toward personalized advertising in general	.73**	.70**
Gender	.12**	.12**
Privacy concerns regarding OBA		-.10*
Adjusted R^2	.55	.56*
Model Statistics	$F(2,271)=164.23$; $MS=127.27$; $p<.01$	$F(3,270)=113.00$; $MS=86.19$; $p<.01$

Notes: Gender was coded as 1=male, 2=female; ** $p<.01$; * $p<.05$.

Hypothesis 4b predicted that consumers' privacy concerns regarding OBA would be negatively associated with their behavioral response to the ad. To test this hypothesis, a logistic regression analysis was performed to examine whether privacy concerns regarding OBA significantly predict clicking on the ad. As presented in Table 10, privacy concerns regarding OBA was negatively related to clicking on the ad. In other words, the respondents with higher levels of privacy concerns regarding OBA were less likely to click on the OBA ad. Thus, H4b was supported.

TABLE 10
Logistic Regression Analysis for Privacy Concerns Predicting Behavioral Response to OBA (N = 274)

Predictor	Clicking on the ad				
	B	S.E	Wald	Exp(B)	<i>p</i>
Privacy concerns regarding OBA	-.37	.12	9.8	.69	.00
Model Statistic	-2LL=176.91; $\chi^2=9.27$; <i>df</i> =1; <i>p</i> <.01				

A follow-up hierarchical logistic regression analysis was conducted to further test the relationship between privacy concerns and clicking on the ad, while controlling for consumer demographics and other control variables. Control variables and demographics were entered in the first block using the forward Wald method, and privacy concern was entered in the second block using the enter method, and clicking on the ad was entered as the dependent variable. Table 11 presents the result.

TABLE 11
Hierarchical Logistic Regression Analysis for Privacy Concerns Predicting Behavioral Response to OBA (N = 279)

Predictors	Model 1 (w/o the main predictor)				Model 2 (w/ the main predictor)			
	B	SE	Wald	Exp (B)	B	SE	Wald	Exp (B)
OBA exposure frequency	-.39**	.19	4.15	.68	-.37	.19	3.58	.70
Online product search frequency	.04**	.01	10.53	1.04	.04**	.01	10.67	1.04
Attitude toward personalized advertising in general	.91**	.20	23.12	2.51	.88**	.20	18.65	2.42
Internet competency	-1.06**	.24	18.84	.35	-1.04**	.25	17.50	.35
Privacy concerns regarding OBA					-.08	.16	.24	.93
Cox & Snell R ²	.18				.18			
Model Statistic	-2LL=132.30; $\chi^2=52.770$; <i>df</i> =4; <i>p</i> <.01				-2LL=132.07; $\chi^2=53.00$; <i>df</i> =5; <i>p</i> <.01			

Notes: ***p*<.01.

Notably, privacy concerns regarding OBA was found to be a non-significant predictor of behavioral response to the ad after controlling for consumer demographics and other control variables. Model 1 revealed that OBA exposure frequency and internet competency were negatively related to clicking on the ad, and online product search frequency and attitude toward personalized advertising in general were positively related to clicking on the ad. Privacy concerns failed to exert significant influence on clicking on

the ad above and beyond the demographics and control variables. The results suggest that those who frequently search for products online, have more positive attitude toward personalized advertising in general, and are less capable of using internet are more likely to click on the ad, but privacy concerns seem unrelated to their clicking behavior.

Hypothesis 4c predicted a positive relationship between consumers' privacy concerns regarding OBA and attention to the ad. A zero-order correlation test revealed that, unlike what was predicted, the level of privacy concerns was negatively related to attention to the ad ($r = -.17, p < .01$). In other words, in general, consumers with higher privacy concerns regarding OBA are likely to pay less attention to OBA. Therefore, H4c was not supported.

In sum, hypotheses 4a was supported but 4b and 4c were not supported. It was found that the consumers who feel greater concerns about their privacy risks are likely to negatively evaluate the ad, but their privacy concerns did not lead to any significant influence on clicking on the ad. Unlike the prediction, consumers with high privacy concerns tended to pay less attention to the ad, which failed to support H4c.

H5: Knowledge of OBA Privacy Risks as an Influencing Factor of Privacy Concerns

Hypothesis 5 tests the relationship between consumers' knowledge of OBA privacy risks and the level of their privacy concerns regarding OBA. Specifically, the effects of consumers' subjective knowledge and objective knowledge about potential privacy risks in relation to OBA were examined. Hypothesis 5a predicted a positive relationship between consumers' subjective knowledge about potential OBA privacy risks and their privacy concerns regarding OBA, and hypothesis 5b predicted a positive

relationship between objective knowledge about potential OBA privacy risks and privacy concerns. Zero-order correlations were performed for both hypotheses.

The results revealed weak yet significant positive correlations between subjective knowledge and privacy concerns ($r = .14, p < .05$), and between objective knowledge and privacy concerns ($r = .17, p < .01$). The results support both H5a and H5b, indicating that the more consumers 1) perceive themselves knowledgeable about the potential privacy risks of OBA and 2) have actual knowledge about the risks, the higher their privacy concerns are regarding OBA.

Two separate hierarchical regression analyses were conducted to further examine the statistically significant associations found in the correlations after controlling for demographics and control variables. Control variables and demographics were entered in the first block using the stepwise method for both H5a and H5b. Subjective privacy risk knowledge for H5a and objective privacy risk knowledge for H5b were entered in the second block using enter method. Level of privacy concerns regarding OBA was entered as the dependent variable for both analyses.

The results presented in Table 12 showed that, even after controlling for consumer demographics and other control variables, subjective and objective knowledge of OBA risks were still significant, positive predictors of privacy concerns. Model 1 revealed attitude toward personalized advertising in general and internet competency were significant predictors, explaining 14% of the total variance. When subjective and objective risk knowledge were entered in Model 2, those predictors were found significantly related to the dependent variables, but only slightly improving the

explanatory power. Based on the beta coefficient sizes, it appears that attitude toward personalized advertising is the strongest predictor of the dependent variable in both analyses. In sum, although knowledge of OBA privacy risks is an influential factor of privacy concerns regarding OBA, having more negative attitude toward personalized ad in general and high internet competency seems to be more important in predicting consumers' privacy concerns.

TABLE 12
Regression Analysis for Knowledge of Privacy Risks Predicting Privacy Concerns
(N =285)

Predictors	Model 1 (w/o the main predictor)	Model 2 (including subjective risk knowledge)	Model 2 (including objective risk knowledge)
Attitude toward personalized advertising in general	-.35**	-.35**	-.34**
Internet competency	.15**	.12*	.14**
Subjective risk knowledge		.13*	
Objective risk knowledge			.13*
Adjusted R ²	.14	.16*	.15*
Model Statistics	<i>F</i> (2,282)=23.44; <i>MS</i> =40.17; <i>p</i> <.01	<i>F</i> (3,281)=17.64; <i>MS</i> =29.77; <i>p</i> <.01	<i>F</i> (3,281)=17.60; <i>MS</i> =29.71; <i>p</i> <.01

Notes: **p* < .05; ***p* < .01.

H6: Trusting Predispositions as an Influencing Factor of Privacy Concerns

Hypothesis 6 tests the effects of consumers' general trusting predispositions on their privacy concerns regarding OBA. Two types of trusting predispositions were examined: dispositional trust and institutional trust regarding the online marketing practices. Hypothesis 6a predicted a negative association between consumers' dispositional trust and the level of privacy concerns regarding OBA. Hypothesis 6b predicted a negative association between consumers' trust in current online marketing practices and their privacy concerns regarding OBA.

Zero-order correlations were performed for both hypotheses. No significant correlation was found between dispositional trust and privacy concerns regarding OBA ($r = -.10, p = .08$), but a moderate, negative correlation was found between institutional trust and privacy concerns ($r = -.52, p < .01$). Thus, H6a was not supported while H6b was supported. These findings indicate that individuals' personality trait to trust or not to trust others in general is not significantly related to their privacy concerns regarding OBA. However, the more individuals trust the current online marketing practices, the less privacy concerns they are likely to have regarding OBA.

A follow-up hierarchical regression analysis was conducted to further examine the negative association found between institutional trust and privacy concerns after controlling for demographics and control variables. Control variables and demographics were entered in the first block using the stepwise method, and institutional trust was entered in the second block using the enter method. Privacy concerns regarding OBA was entered as the dependent variable. As presented in Table 13, institutional trust remained

as a strong, significant predictor of privacy concerns even after controlling for demographics and other control variables. While Model 1 revealed attitude toward personalized advertising in general and internet competency as significant predictors of privacy concerns, those variables became non-significant when institutional trust was entered in the second block. In Model 2, institutional trust emerged as a sole, strong predictor, showing significant improvement over Model 1 in the total variance explained by the regression model (adjusted R^2 change from 14% to 27%). The results indicate that institutional trust in online marketing practices exerts significant influence on consumers' privacy concerns regarding OBA, offering further support for H6b.

TABLE 13
Hierarchical Regression for Institutional Trust Predicting Privacy Concerns
regarding OBA (N = 285)

Predictors	Model 1 (w/o the main predictor)	Model 2 (w/ the main predictor)
Attitude toward personalized advertising in general	-.35**	-.09
Internet competency	.15**	.08
Institutional trust toward online marketing practices		-.44**
Adjusted R^2	.14	.27**
Model Statistics	$F(2,282)=23.44$; $MS=40.17$; $p<.01$	$F(3,281)=34.40$; $MS=50.49$; $p<.01$

*Note: ** $p<.01$*

In sum, individuals' personality trait to trust others in general was found unrelated to the level of concerns regarding potential OBA risks, while the level of trust in online

marketing practices appears to be significantly related to privacy concerns. Therefore, only H6b was supported.

CHAPTER 6. SUMMARY AND DISCUSSION

Summary of Findings

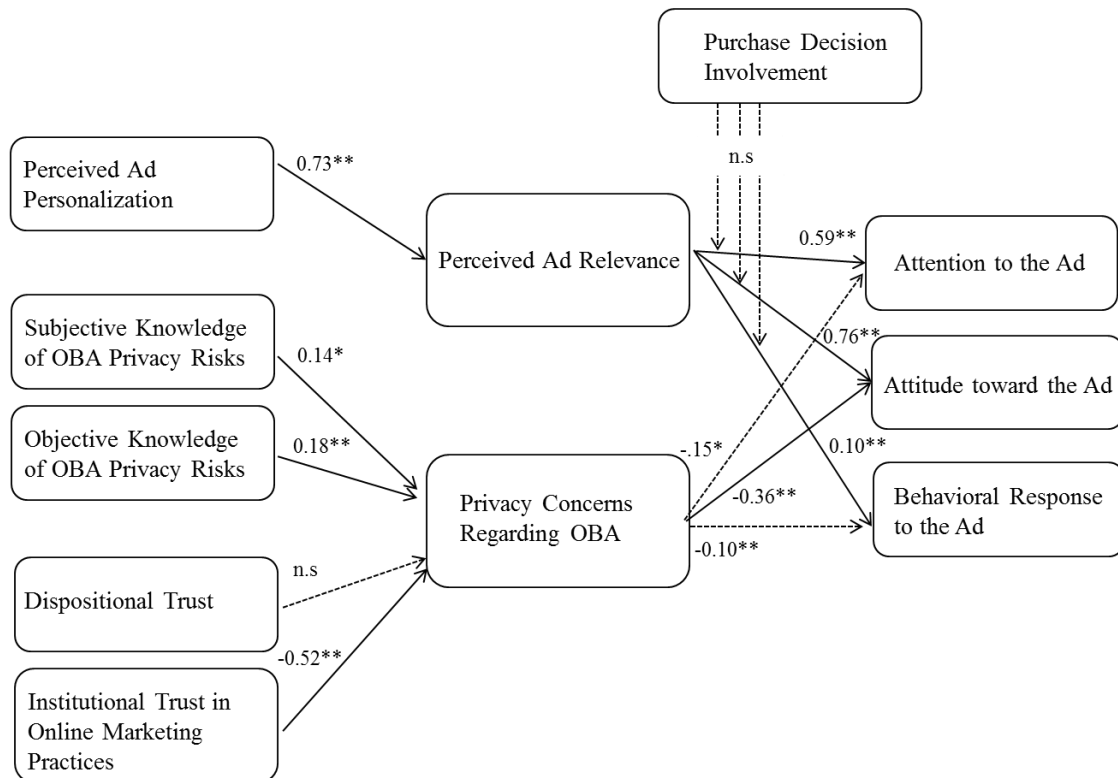
To understand OBA effects, this study proposed two important perceptual factors, perceived ad relevance and privacy concerns, and examined the influence of the two factors on consumers' cognitive, attitudinal, and behavioral responses to OBA. A potential moderating effect of purchase decision involvement on the relationship between perceived relevance and ad responses was also tested. Also examined are potential influencing factors for perceived ad relevance and privacy concerns regarding OBA.

Perceived ad relevance was found to be a strong, positive predictor of consumer responses to an OBA even after controlling for consumer demographics, OBA exposure frequency, time spent online, online product search frequency, attitude toward personalized advertising in general, and internet competency. Consumers with high levels of perceived ad relevance tended to pay more attention to the ad, more positively evaluate the ad, and click on the ad. Perceived ad personalization was significantly and positively related to perceived ad relevance. However, purchase decision involvement did not affect the relationships between perceived ad relevance and consumer responses to the ad.

While privacy concerns regarding OBA were found negatively related to consumer attitude toward an OBA, this factor seems to play a much less important role than perceived ad relevance in predicting consumer responses. Consumers with high levels of privacy concerns regarding OBA were likely to have more negative attitude toward the ad. However, the effect of privacy concerns on clicking behavior disappeared

after controlling for control variables and demographics, and the effect of privacy concerns on ad attention was found non-significant. Consumers' subjective and objective knowledge regarding OBA privacy risks were found positively related to privacy concerns. Those who were more knowledgeable or think themselves to be knowledgeable about OBA-related privacy risks were likely to have higher levels of privacy concerns. Additionally, consumers' general trust in online marketing practices was negatively related to the level of privacy concerns regarding OBA. Figure 1 and Table 14 summarize the results.

FIGURE 1
Summary of Findings



Notes: Hypothesized relationships that were not supported are marked with dashed lines.
* $p < .05$; ** $p < .01$.

TABLE 14
Summary of Hypotheses Test Results

Hypotheses		Results
H1a	Consumers' perceived relevance of an OBA would be positively related to their attention to the ad.	Supported
H1b	Consumers' perceived relevance of an OBA would be positively related to their attitude toward the ad.	Supported
H1c	Consumers' perceived relevance of an OBA would be positively related to their behavioral response to the ad.	Supported
H2a	The relationship between perceived relevance of an OBA and attention to the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.	Not Supported
H2b	The relationship between perceived relevance of an OBA and attitude toward the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.	Not Supported
H2c	The relationship between perceived relevance of an OBA and behavioral response to the ad would be stronger when the level of purchase decision involvement at the moment of ad exposure is higher.	Not Supported
H3	The level of perceived personalization of an OBA would be positively related to consumers' perceived relevance of the ad.	Supported
H4a	Consumers' privacy concerns regarding OBA would be negatively related to their attitude toward the ad.	Supported
H4b	Consumers' privacy concerns regarding OBA would be negatively related to their behavioral response to the ad.	Not Supported
H4c	Consumers' privacy concerns regarding OBA would be positively related to their attention to the ad.	Not Supported

TABLE 14
Summary of Hypotheses Test Results (cont.)

Hypotheses		Results
H5a	Consumers' subjective knowledge about potential OBA privacy risks would be positively related to their privacy concerns regarding OBA.	Supported
H5b	Consumers' objective knowledge about potential OBA privacy risks would be positively related to their privacy concerns regarding OBA.	Supported
H6a	Consumers' trust disposition would be negatively related to their privacy concerns regarding OBA.	Not Supported
H6b	Consumers' trust in online marketing practices would be negatively related to their privacy concerns regarding OBA.	Supported

Discussion of Results and Implications

Research on OBA is in the very early stage in spite of its rapid growth. This study took the first step toward understanding the mechanism of OBA effects by proposing and testing two potentially important perceptual factors that may account for consumers' responses to OBA. Although more research is needed in this area, this study contributes to expanding the personalized advertising research by examining the effects of the newest and controversial form of online personalized advertising.

Regarding consumers' reactions to OBA, previous exploratory studies suggested that consumers seemed to be concerned about potential privacy risks regarding OBA, while a subset of consumers perceived OBA to be beneficial as long as it delivers personally relevant offers (McDonald and Cranor 2010; Purcell, Brenner, and Rainie 2012; Turow et al. 2009; Ur et al. 2012). Looking at the descriptive statistics for

perceived ad relevance and privacy concerns, it seems that a similar pattern is observed in this study. The respondents in the present study did not consider the OBA they saw was very relevant, while their overall privacy concern level was relatively high.

Of particular importance, the results of this study highlight the importance of perceived ad relevance in influencing consumer responses to OBA, which is consistent with the findings from previous research on personalized advertising effects (Campbell and Wright 2008; Merisavo et al. 2007; Pechmann and Steward 1990; Zeng, Huang, and Dou 2009). Perceived ad relevance was found to be a stronger factor generating positive consumer responses to OBA in cognitive, attitudinal, and behavioral aspects, while the influence of privacy concerns was rather minimal or non-significant. These findings suggest that the positive impact of OBA relevance may overcome the negative impact of OBA privacy concerns.

Furthermore, it should be noted that purchase decision involvement did not significantly moderate the relationships between perceived ad relevance and consumer responses. The non-significant finding for purchase decision involvement indicates that perceived ad relevance seems to be a strong, stable, and consistent factor that leads to positive consumer responses to OBA regardless of the level of situational purchase decision involvement.

Perceived ad personalization was found to be a predominant, positive influencing factor on perceived ad relevance. This finding suggests that advertising practitioners should focus on ad personalization in their OBA strategies in order to increase perceived ad relevance. Some examples of ad message personalization strategies include offering

each consumers timely promotions for their preferred products and giving them exclusive access (Simonson 2005) and taking an strategic step in advertising display by connecting OBA with contextually related Web sites (Unni and Harmon 2007).

In contrast to the consistently significant relationships between perceived ad relevance and consumer responses to OBA, the influence of privacy concerns seems to be relatively weak. This finding suggests that privacy concerns may not be as strong an influencer as suggested in the previous literature. In the domain of direct mails, unsolicited emails, or telephone calls, the negative influence of privacy concerns on ad responses was clearly demonstrated (Phelps, Nowak, and Ferrell 2000; Sheehan and Hoy 1999; Yu and Cude 2009). However, the findings of this study indicate that, in the context of OBA designed for each individual based on his/her recent product search behaviors, privacy concerns may be a less important factor than ad relevance. The finding need to be further tested and more research is needed to better understand the role of privacy concerns in different contexts of personalized advertising.

Considering all, although OBA may have a “double-edged sword” effect, the unfavorable aspect of OBA (i.e., potential privacy risks and consumers’ privacy concerns) may not be as strong as the favorable aspect (i.e., heightened perceived ad relevance). Still, consumers’ privacy concerns are an issue that should not be taken lightly, and advertising practitioners should make efforts to understand and alleviate privacy concerns related to OBA. Given this study’s finding that institutional trust in online marketing practices was a dominant predictor of consumers’ privacy concerns regarding OBA, it is recommended that such efforts should focus on educating

consumers about myths and facts about online advertising and data tracking practices, reducing unnecessary concerns and misperceptions, and improving general trust in the online advertising practice.

Limitations and Suggestions for Future Research

This study has multiple methodological limitations calling for the reader's caution in interpreting the findings and offering suggestions for future research. First, this study used a volunteer sample of active internet users with relatively high internet competency and heavy online shopping tendency. Their beliefs and perceptions regarding online environment safety and online advertising practices are likely to be different from those of general population, and may affect the generalizability of the findings. Thus, more research with general population is suggested.

It should be also noted that there was very limited variability in participants' behavioral response to OBA (i.e., clicking on the ad). Only 10% of the participants reported they clicked on the ad they recently saw, and statistical analyses were conducted based on this small amount of variability. Thus, further research is strongly encouraged to test the relationships between perceptual variables and consumers' clicking on the ad and other behavioral reactions to OBA.

Furthermore, this study used a survey method which cannot provide true causal testing for the relationships between the perceptual factors and consumer responses to an OBA. To further test the hypotheses posed by this study and other factors influencing consumer responses to OBA, future studies should consider using experimental methods.

Another area for future examination involves the type of OBA. This study focused on one specific type of OBA, image-dominant banner ads. Further examination and validation across various OBA types, such as text-dominant banner ads or a combined version of individual specific elements and product recommendations, are strongly encouraged to achieve a more comprehensive understanding of consumer responses to OBA.

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Appendix 1: QUESTIONNAIRE

<Screening Page>

Please read the information below carefully and answer each question by clicking an appropriate checkbox.

Online Behavioral Advertising is a form of online advertising strategy, which tracks consumers' online activities over time – including the searches the consumer has conducted, the web pages visited, and the content viewed.

In this study, we are examining one major type of Online Behavioral Advertising: An online banner ad that exactly re-shows the specific products/services you have recently clicked on and viewed online or features the specific brands of online stores you have recently visited.

The ad format may vary, but here are some typical examples of such ads.

Example A) Last night, you visited Apple's online website to check out new laptop models you were considering to purchase. You were looking around several laptop models on the site and left the site without buying anything. This morning, when you went to an online weather site to check today's weather you noticed a banner ad on the side bar showing the pictures of the exact laptop models you looked at last night.

Example B) A week ago, you visited Nike's online shopping site to buy your brother's birthday present. Today, when you were reading a news article at New York Times online site, you noticed a visual banner ad for Nike on top of the article.

* Have you seen this type of advertising in the past 6 months?

- (1) Yes, I have had the exact same experience. {Proceed to Q1 }
- (2) I have had similar experience but not in the same way (e.g., a location-tracking ad, recommended products, flight or hotel suggestions, etc.) {Proceed to Q1 }
- (3) No, I have never had this type of experience. {Disqualified }
- (4) Don't know {Disqualified }

Q1. On a typical day, how often do you see the kind of online behavioral ads described in the previous page?

- (1) Never or almost never
- (2) Once
- (3) Twice
- (4) Three times
- (5) More than three times

Q2. Below are some statements that might describe your reaction to Online Behavioral Advertising in general. How much do you agree or disagree with each statement? Please mark your responses by checking one number for each statement. There are no right or wrong answers.

**When I see Online Behavioral Advertising,*

	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	6	7
(1) I get concerned that my online activity history could be misused.	1	2	3	4	5	6	7
(2) I get concerned about what others might do with my online activity history data.	1	2	3	4	5	6	7
(3) I get concerned that my online activity history could be used in a way I did not foresee.	1	2	3	4	5	6	7

Q3. The questions in this section ask how much you would consider yourself to be knowledgeable about and familiar with potential privacy risks of Online Behavioral Advertising.

- (1) To what extent are you aware of potential privacy risks of Online Behavioral Advertising?

Know nothing			Neutral		Know a lot	
1	2	3	4	5	6	7

(2) To what extent are you knowledgeable about potential privacy risks of Online Behavioral Advertising?

Not knowledgeable at all		Neutral			Very knowledgeable	
1	2	3	4	5	6	7

(3) To what extent are you familiar with potential privacy risks of Online Behavioral Advertising?

Not familiar at all		Neutral			Very familiar	
1	2	3	4	5	6	7

(4) Compared to other consumers, do you feel that you're more, less, or similarly informed about potential privacy risks of Online Behavioral Advertising?

Much less informed		Similarly informed			Much more informed	
1	2	3	4	5	6	7

Q4. The following are some factual statements about online behavioral advertising and marketers' tracking of consumer online activities. Some are true statements while others are false. To the best of your knowledge, please answer if each statement is true or false. There is no harm in getting these questions wrong. We are only interested in your honest response. If you don't know the answer, just select "don't know."

	True	False	Don't Know
(1) Most Online Behavioral ads primarily use personally identifiable information (e.g., name, address, telephone number, credit card information, etc.) to provide consumers with tailored messages.	1	2	3
(2) Consumer consent is not necessary when online advertisers track consumers' online activities.	1	2	3
(3) Consumers can choose to opt-out to stop advertisers from collecting their online activity history.	1	2	3

(4) Consumers can choose to select the type of online activity history data that can be collected by advertisers.	1	2	3
(5) Consumers' online activity history data (e.g., what they have searched and viewed, where they have visited, etc.) stored in their internet browser can be sold to online advertisers.	1	2	3
(6) If a website shows online behavioral ads, that means the site is tracking consumers' online activity history.	1	2	3
(7) There is a federal law regulating online marketers' tracking of consumer online activities.	1	2	3

[Now, try to remember one specific online behavioral ad you most recently saw. Please answer all the questions thinking about the specific ad.]

Q5. What was the ad about? Please click the box that represents your experience best. Please choose one.

- (1) The specific product(s) you had recently viewed online.
- (2) The specific brand (without particular product images) you had recently viewed online.
- (3) The brand of online store you had recently visited.
- (3) Both specific product(s) and brand you had recently viewed online.
- (4) Recommendation of products/services similar to what you had recently viewed online.
- (5) Other (please specify): _____
- (6) Can't recall the specific content. (Proceed to the demographics page)

Q6. On which kind of website, did you see the specific ad? Please choose one.

- (1) A search engine site (e.g., Google, Bing, etc.)
- (2) An information/news site (e.g., Weather forecasting site, online news site, etc.)
- (3) An entertainment site (e.g., YouTube, etc.)
- (4) An email site (e.g., Gmail, Hotmail, etc.)
- (5) A general portal site (e.g., MSN, Yahoo, etc.)
- (6) A social site (e.g., Facebook, Twitter, Blog, etc.)
- (7) A shopping site (e.g., Amazon.com, Drugstore.com, etc.)
- (8) Other (please specify): _____

Q7. How much attention did you pay to the ad?

No attention at all			Neutral				A lot of attention	
1	2	3	4	5	6	7		

Q8. Did you click on the ad?

- (1)Yes
- (2)No
- (3)Don't recall

Q9. Thinking about the specific ad you saw, please indicate to what extent you agree or disagree with each of the following statements regarding your thoughts about the ad.

	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	6	7
(1)The ad I saw made purchase recommendations that matched my needs at that time.	1	2	3	4	5	6	7
(2)The ad I saw enabled me to order a product tailored for me.	1	2	3	4	5	6	7
(3)The ad I saw was tailored to my shopping situation at that time.	1	2	3	4	5	6	7
(4)The ad I saw made me feel that I was a unique customer.	1	2	3	4	5	6	7
(5)The ad I saw was customized to my needs at that time.	1	2	3	4	5	6	7

Q10. Please rate the specific online behavioral ad you saw on the following attributes.

**The online behavioral ad I saw was...*

Good			Neutral				Bad	
1	2	3	4	5	6	7		

Beneficial						Harmful
1	2	3	4	5	6	7
Useful						Not useful
1	2	3	4	5	6	7
Informative						Uninformative
1	2	3	4	5	6	7

Q11. Stay focused on the specific ad you recently saw. Please indicate how much you agree or disagree with each of the statements by clicking the number.

**When I saw the online behavioral ad, I felt the information in it might be..*

	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	6	7
(1) Important to me	1	2	3	4	5	6	7
(2) Meaningful to me	1	2	3	4	5	6	7
(3) Created just for me	1	2	3	4	5	6	7
(4) Worth remembering	1	2	3	4	5	6	7
(5) Of value to me	1	2	3	4	5	6	7
(6) Relevant to my needs	1	2	3	4	5	6	7
(7) Useful to me	1	2	3	4	5	6	7
(8) Worth paying attention to	1	2	3	4	5	6	7
(9) Interesting to me	1	2	3	4	5	6	7
(10) Likely to give me new ideas	1	2	3	4	5	6	7

Q12. The following questions are regarding the degree of personal importance of the product purchase decision-making for the product you saw featured in the online behavioral ad. Thinking about the specific product you considered buying, choose the answer that best describes your thought about the product you searched or purchased at that time.

- (1) In selecting from many types and brands of the product available in the market, to what extent did you care as to which one you should buy?

I did not care at all which one I should buy			Neutral		I cared great deal which one I should buy	
1	2	3	4	5	6	7

- (2) How important was it for you to make a right choice of the product?

Not at all important			Neutral		Extremely important	
1	2	3	4	5	6	7

- (3) In making your selection of the product, how concerned were you about the outcome of your choice?

Not at all concerned			Neutral		Very much concerned	
1	2	3	4	5	6	7

You are almost done!

There are just a few more questions I would like to ask you for classification purposes.

Q13. On a typical day, about how many hours do you spend using the Internet for non-work purposes? (Please write in: If you spend less than an hour, please answer using a decimal (e.g., 0.5)

_____hour(s)

Q14. About how many times do you search for products/services online in a typical week? Please write in.

_____ times

Q15. Please rate personalized advertising in general (e.g., unsolicited commercial e-mail, postal direct mail, telemarketing, and advertising text messaging) on the following attributes.

Good				Neutral			Bad
1	2	3	4	5	6	7	
Beneficial							Harmful
1	2	3	4	5	6	7	
Useful							Not useful
1	2	3	4	5	6	7	
Informative							Uninformative
1	2	3	4	5	6	7	

Q16. Please indicate how much you agree or disagree with each of the following statements that describe yourself by clicking the number. 7 means “strongly agree” and 1 means “strongly disagree.”

	Strongly Disagree						Strongly Agree
(1) I am skilled at using the Internet.	1	2	3	4	5	6	7
(2) I consider myself knowledgeable about the Internet.	1	2	3	4	5	6	7
(3) I know how to find what I am looking for on the Internet.	1	2	3	4	5	6	7

Q17. Please indicate how much you agree or disagree with each of the following statements that describe yourself by clicking the number.

	Strongly Disagree						Strongly Agree
(1) It is easy for me to trust a person/thing.	1	2	3	4	5	6	7
(2) My tendency to trust a person/thing is high.	1	2	3	4	5	6	7

(3) I tend to trust a person/thing, even though I have little knowledge of it.	1	2	3	4	5	6	7
(4) Trusting someone or something is not difficult.	1	2	3	4	5	6	7

Q18. Please indicate how much you agree or disagree with each of the statements about online marketing practices in general.

	Strongly Disagree				Strongly Agree		
	1	2	3	4	5	6	7
(1)The current online marketing practices offer enough safeguards to make me feel comfortable about personalized marketing messages.	1	2	3	4	5	6	7
(2)I feel assured that legal and technological structures of online marketing adequately protect me from problems associated with personalized marketing messages online.	1	2	3	4	5	6	7
(3)I feel confident that encryption and other technological advances of current online marketing practices make it safe for me to interact with personalized marketing messages.	1	2	3	4	5	6	7
(4)In general, current online marketing practices provide a robust and safe environment for consumers.	1	2	3	4	5	6	7

Q19. What is your age?
 _____ (years old)

Q20. What is your gender? (check one)
 (1) Male
 (2) Female

Q21. What is your highest level of education?

- (1) Less than high school
- (2) Completed some high school
- (3) High school graduate or equivalent
- (4) Business, Technical, or Vocational school after high school
- (5) Some college, but no 4-year degree
- (6) College graduate
- (7) Completed some graduate school, but no degree
- (8) Completed a graduate degree

Q22. Before taxes, which of the following categories did your total family income fall into last year?

- (1) Less than \$15,000
- (2) \$15,000 to \$24,999
- (3) \$25,000 to \$34,999
- (4) \$35,000 to \$45,999
- (5) \$50,000 or more

Thank you very much for your participation!