Don't Take It Personally: The Effect of Explicit Targeting in Advertising Personalization

Completed Research Paper

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Abstract

Firms increasingly use consumers' information to personalize their communication. Personalized advertisements, targeted based on users' past behavior, offer users relevant product information that fits their preferences. In this study, we investigate the implications of explicit targeting, making the underlying targeting mechanism explicit to consumers, and ad message framing, in terms of utilitarian or hedonic product benefits. In a large-scale field experiment in which we run a campaign for a mobile application, we show that explicit targeting reduces advertising effectiveness pointing towards increased consumer privacy concerns. While utilitarian ad messages reinforce the negative effect of explicit targeting, the use of hedonic ad messages alleviates such a negative effect. Our study contributes to IS literature on advertising personalization and the personalization privacy paradox. We provide practical insights for firms that can be used in the design and implementation of personalized advertising campaigns.

Keywords: Advertising, Field Experiment, Personalization, Consumer Privacy Concerns, Hedonic, Utilitarian, Mobile Advertising, Social Advertising, Targeting

Introduction

The increasingly available data on consumer behavior allows firms to track consumer behavior closely. Using this data on consumer behavior firms can infer consumer preferences, address consumers with more personalized messages, and target more specific consumer groups. Firms increasingly use consumers' information to personalize their interactions with them across various channels (Arora et al. 2008). For example, consumers may receive personalized recommendations (Xiao and Benbasat 2007) personalized e-mails (Wattal et al. 2012), or personalized advertisements based on their own or friends' preferences and personal information (Bleier and Eisenbeiss 2015; Tucker 2012). Personalized advertisements are tailored to each individual user who visits a website and are adapted to consumers' past individual-level behavior (Summers et al. 2016). The concept of advertising personalization has been well established in online channels and shown to be a very effective way to promote products to interested consumer groups (Arora et al. 2008; Bleier and Eisenbeiss 2015; Chen and Stallaert 2014; Schumann et al. 2014). From a consumer perspective, the benefits of advertising personalization are evident as consumers receive relevant product information that closely matches their preferences (Ansari and Mela 2000). As a result, they are more likely to respond favorably to such advertising messages. From a firm's perspective, advertising personalization allows firms to benefit from the evidenced large response rates and favorable attitudes towards ads (Ansari and Mela 2000; Tam and Ho 2005). This development has substantial implications on how companies can target and approach consumers (Bart et al. 2014; Ghose and Han 2011). Firms need to adjust their marketing strategies to reach consumers effectively through these new channels.

Consumer targeting is defined as the ability to address consumers that are likely to be more interested in an advertisement by segmenting them using their personal information. Personalization, on the other hand, puts consumer preferences first and adjusts advertising content to the preferences of consumers. Advertising personalization can be applied either by targeting an advertising message to only the relevant consumer groups, or by customizing the advertising message to relate to a specific user (Wattal et al. 2012). Building on the effectiveness of advertising personalization, we investigate the effects of explicit targeting and how ad message framing moderates the effect of explicit targeting. Explicit targeting makes the advertising targeting explicit to consumers by stating it in the advertising text. Consumers are therefore more likely to perceive a presented advertisement as personalized to their preferences. Previous literature offers contradicting results with respect to increasing consumers' perceived personalization. Research in the area of personalized recommendations points towards an increase of perceived advertising relevance when consumers are aware of the presence of a personalized service (Komiak and Benbasat 2006). This effect is mostly induced by consumers putting higher emotional and cognitive trust into presented recommendations. In contrast, other work points that consumers perceive targeted ads less favorably when making the targeting mechanism more explicit (Tucker 2012; Wattal et al. 2012). The negative implications of personalization are mostly driven by consumer awareness of making use of their personal information. This awareness leads to consumer privacy concerns (Sutanto et al. 2013) and reactance towards personalized ads (White et al. 2008). IS literature refers to balancing the benefits of personalization with consumers' desire for information privacy as personalization-privacy paradox (Awad and Krishnan 2006; Belanger and Crossler 2011; Smith et al. 2011; Sutanto et al. 2013; Xu et al. 2011).

Framing of an advertising message can largely influence consumers' attitudes and responses. Advertising messages can leverage the persuasive power of the strongest traits of the advertised product (Homer and Yoon 1992). Therefore, based on the notion that all products entail both hedonic and utilitarian benefits (Batra and Ahtola 1990), we examine how the use of ad message framing influences the effectiveness of an advertisement. More precisely, we distinguish between utilitarian, representing the functional benefits of the application, and hedonic message framing, representing the affective and experiential benefits of the mobile application. Further, we investigate whether the effect of explicit targeting on ad effectiveness is moderated by ad message framing.

The goal of this study is to assess how explicit targeting and advertising message framing (utilitarian vs. hedonic) influence advertising effectiveness. To investigate this relationship we use data from a large field experiment that we conducted in collaboration with a European digital strategy firm. We performed a Facebook mobile advertising campaign to advertise a mobile application that stores consumers' loyalty cards. Using a between-subject experiment design we investigate the effects of explicit targeting (yes/no) and advertising message framing (utilitarian/hedonic).

Our results show that explicit targeting in advertising, in fact, decreases advertising performance. This can be explained with the notion of the personalization-privacy paradox (Aguirre et al. 2014; Awad and Krishnan 2006; Sutanto et al. 2013; Xu et al. 2011). Advertisers need to weigh the positive implications of using consumers' personal information to increase the degree of personalization and advertising relevance with consumer privacy concerns that arise through the usage of their personal data. We argue that by pointing out the underlying targeting mechanism in the advertising message consumers become more aware of the usage of their personal information and may evaluate the advertisement from a privacy invasive standpoint. Regarding the advertised benefit, we show that utilitarian benefits increase the advertising effectiveness compared to promoting hedonic benefits as they can more efficiently communicate the product's usefulness in mobile ads. Nevertheless, utilitarian message framing moderates the effect of explicit targeting enhancing its negative effect on ad performance. When consumers assess advertising messages more rationally through utilitarian message framing, their privacy concerns are increased. This means that hedonic advertising message framing can decrease the negative effect of explicit targeting on advertising effectiveness. We further show that the decision to click on an ad drives conversion probabilities (depicted by a user's decision to install the mobile app). Our results remain robust when controlling for additional advertising characteristics such as the category of advertised products and consumer demographics such as age and gender.

Our study contributes to IS and marketing research in advertising personalization and targeting. We offer a set of novel insights into how consumers react to personalized advertising and extend our understanding of the role of consumer privacy concerns in this area. First, we add to the discussion on the implications of perceived personalization. While former research found ambiguous results on how consumers respond when explicitly confronted with behaviorally targeted advertising that increases perceived personalization, we show empirically that advertising performance decreases when including targeting information in the advertising text. This finding points towards a limitation of advertising personalization and underlines the importance of considering benefits and costs of advertising personalization in line with the concept of the personalization-privacy paradox.

Second, we investigate the effects of hedonic and utilitarian ad message framing. Though products have been found to have both hedonic and utilitarian value components (Batra and Ahtola 1990), it remains unclear for advertisers which value component should be communicated to consumers in advertising. Contradicting to prior findings that communicating hedonic product benefits can increase ad effectiveness (Bart et al. 2014), we find that utilitarian ad message framing increases ad performance. We argue that utilitarian ad message framing outperforms hedonic ad message framing because it is more concrete and transmits information to consumers more efficiently.

Third, we give insights into strategies to mitigate the negative implications of explicit targeting by investigating the interaction between explicit targeting and ad message framing. By framing advertising messages in a hedonic instead of utilitarian way, negative effects of explicit targeting are being reduced as consumers process advertising messages less rationally and from a rather affective perspective.

Last, this is one of the first studies to investigate the implications of advertising personalization by making use of the personalization opportunities of social advertising on mobile devices. Insights into mobile advertising have become increasingly important for advertisers as consumers online consumption patterns are shifting to mobile devices. We conduct a large-scale field experiment in which we manipulate mobile advertisements for a mobile application. Our findings help firms to define adequate strategies to market their products in a mobile environment.

Related Literature

Advertising Targeting and Advertising Personalization

Advertising targeting describes the use of consumer characteristics to identify consumer segments that are more likely to respond positively to advertising (Bleier and Eisenbeiss 2015). Targeting allows advertisers to invest their marketing budget more effectively by decreasing the amount of consumers that are confronted with ads that they deem irrelevant (Iyer et al. 2005). Generally speaking, advertising targeting focuses on addressing consumers at the right moment in time and place (Raeder et al. 2012). The internet allows marketers to collect and make use of extensive information on consumers that can be used to identify target groups. Such information availability has enabled different targeting techniques, e.g. placing advertising on websites that focus on related topics (contextual targeting) or sending promotional massages to consumers at the point in time when they are more likely to consider them (temporal targeting). Essentially, the aim of targeting is to define and address audiences with advertisements where and when they are on average most receptive towards the respective ads.

By contrast to advertising targeting, where the starting point is a given advertisement, advertising personalization begins with a given consumer and seeks to create individualized advertisements that fit her preferences best (Bleier and Eisenbeiss 2015). Advertising personalization describes the deliberate act of an advertiser to adjust advertising content to the preferences of a group of consumers or an individual consumer (Arora et al. 2008). Former studies in the area of personalized digital advertising have mixed results. While overall personalization is considered to have a positive impact on advertising performance, advertisers run the risk to "over-personalize" their ads by confronting consumers with too specific advertising content which leads to a decrease in advertising performance (Bleier and Eisenbeiss 2015; Johar et al. 2014). The negative impact of a "too high" degree of advertising personalization is driven by consumers that are constantly updating their preferences leading to a mismatch between personalized advertising content and a consumer's updated preferences (Simonson 2015).

Personalization in accordance with the preferences of a group of consumers is considered as one-to-n marketing, whereas individual personalization is categorized as one-to-one marketing. The focus of this study is one-to-n (segment-level) marketing by targeting specific interest groups within a social media environment. We aim to investigate the effect of making the underlying targeting mechanism in a personalized advertising context explicit.

Perceived Personalization

By making an underlying targeting mechanism explicit in the advertising text consumers are made aware of the fact that they are addressed with an advertisement that the advertiser considers relevant to them. This leads to an increase in perceived personalization with the consumer. In both marketing and information systems literature there is a debate about the implications of an increase in perceived personalization.

Using the underlying targeting mechanism to personalize the advertising text can lead to an increase in perceived advertising relevance for the consumer. This is the case as the consumer can more easily recognize that an advertised product is actually relevant by reading and processing the advertising text. Related IS research found that perceived personalization increases consumers' intention to adopt recommendations as they put higher trust in the recommendation system (De Keyzer et al. 2015; Komiak and Benbasat 2006). This means that by recognizing that a message is personalized, consumers are more likely to consider the message, as they believe the presented product is of high relevance to them. Further, consumers dedicate a larger amount of attention towards web content that directly related to their characteristics via the perception of self-reference (Tam and Ho 2006). Such an increased attention leads to more elaborate cognitive processing of web content that is necessary to recognize the relevance of an offer and to potentially decide whether to accept the presented offer. When personalized web content matches consumers' preferences well it is elaborated more extensively (Ho and Tam 2005).

At the same time, personalizing the advertising messages based on the underlying targeting mechanism can actually make consumers more conscious regarding the way their information is being used to address them with advertising messages. Other studies have found that making targeting mechanisms

(more specifically the users' social connections) too explicit in the advertising message, increases consumer reactance and therefore decreases advertising effectiveness (Tucker 2012; White et al. 2008). Though consumers have been found to respond favorably when advertising messages seem more personalized, there is evidence that they may react negatively to personalized product offerings when including personalized greetings (Wattal et al. 2012). This is likely the case as explicitly presenting the information that is being used to target a consumer in the advertising message leads to an increase in consumers' privacy concerns. The relationship between personalization and consumer privacy concerns is coined as personalization-privacy paradox (Awad and Krishnan 2006; Sutanto et al. 2013; Xu et al. 2011). It refers to "IT-enabled personalization, while potentially making the user computing experience more gratifying, often relies heavily on the user's personal information to deliver individualized services, which raises the user's privacy concerns" (Sutanto et al. 2013, p. 1141). Marketers need to balance the personalization potential with a potential induction of consumer privacy concerns. Making consumers more aware of the fact that their information is being used in advertising without prior approval leads to an increase in privacy concerns (Hoy and Milne 2010). The concept of privacy concerns in the digital environment is a growing theme among consumers, firms and policy makers, as well as academics (Belanger and Crossler 2011; Smith et al. 2011).

We argue that when consumers are confronted with an advertising that is explicitly making use of their personal information they are primed towards being more privacy sensitive. Former research has found that priming with respect to how information is being presented may substantially influence the way consumers evaluate the environment and respond to informational stimuli (Higgins and King 1981). Explicitly priming an information cue to an individual user, activates the memory mechanism around that information cue and makes it more accessible. As a result, the information is more influential during the decision making process (Dijksterhuis et al. 2005; Tulving and Schacter 1990). Furthermore, the more recent the priming, the more highlighted its influence is on consumers' advertising evaluations (Srull and Wyer 1978). While targeting represents an implicit mechanism to increase advertising relevance, personalizing the advertising message by making the targeting mechanism explicit primes consumers to focus on the use of their information to serve them advertisements. In line with prior research (Bright and Daugherty 2012), we argue that consumers react more negatively towards advertisements when they are primed towards privacy concerns. Therefore, we assume that explicitly mentioning the targeting mechanism in the ad text increases consumer privacy concerns and therefore decreases ad effectiveness:

Hypothesis 1 (H1): *Explicit targeting decreases advertising effectiveness compared to implicit targeting*.

Framing of Product Benefits

Consumers' attitudes towards products are characterized by both utilitarian and hedonic value components (Batra and Ahtola 1990). While utilitarian value encompasses the functional benefits of a product, hedonic value relates to experiential and enjoyment-related benefits. Generally, consumers' choices are driven by product considerations taking hedonic and utilitarian product benefits into account (Babin et al. 1994). In line with consumers assigning different levels of product benefits, products can be characterized as rather hedonic or utilitarian. Hedonic products typically contain a highlighted intangible and affective value, while utilitarian goods are rather tangible and goal-oriented (Dhar and Wertenbroch 2000). The difference between utilitarian and hedonic products is not easily identifiable since products can simultaneously provide consumers with both utilitarian and hedonic benefits (Batra and Aholta 1990; Voss et al. 2003). Consumers' attitudes towards advertisements are also following an assessment of the perceived value components of the presented product. The perceived utility of an advertisement is related to the utilitarian benefits of the advertised product and the feelings related to the advertisement (affective reaction) related to its communicated hedonic benefits (Hassan et al. 2007).

A major goal of advertising communication is to persuade consumers that the presented product is of value to them leading to a purchase intention. Petty et al. (1983) argue that there are two distinct routes to persuasion: the central route and the peripheral route. Under the central route, persuasion results from a careful and thoughtful consideration of the information presented. This route involves thorough message elaboration. Under the peripheral route, persuasion originates from the association of advertising messages with positive or negative cues. Such cues are generally unrelated to the logical quality of the message and touch upon the intangible attributes of a product. Andrews and Shimp (1990) showed that

consumers with a high product involvement are more likely to be persuaded and to change their attitude when they are exposed to strong arguments (central cues). We expect that utilitarian benefits that are tightly linked to the tangible characteristics of a product are more effective in the context of targeted advertising, since via targeting the advertising message is disseminated to consumers that are more involved in the product category. Consumers only perceive hedonic benefits of a product more important than the respective utilitarian benefits when a certain threshold of functionality is reached (Chitturi et al. 2007). Therefore, although there is evidence that hedonic benefits are influential, this only holds under the necessary condition that the utilitarian benefits are convincingly communicated.

Schulze et al. (2014) showed that consumers are hedonically motivated when using social networking sites. Thus, advertised messages regarding utilitarian benefits of products clash with users' situational expectations (Bitner and Obermiller 1985). As such, users intuitively dedicate fewer cognitive resources to evaluating advertising messages and instead rely on simple heuristics, which make users prone to be more easily persuaded. Additionally, an advertisement that promotes the utilitarian benefits of a product provides a more concrete message and is transmitting information about the product's function and value more efficiently (especially given the space restrictions in social media advertising). We hypothesize:

Hypothesis 2 (H2): *Advertising utilitarian product benefits increases advertising effectiveness compared to advertising hedonic product benefits.*

Advertising the utilitarian benefits of a product facilitates a rather efficient information transmission of the functional product attributes. Describing relevant utilitarian product aspects also fosters consumers to elaborate products more deeply, especially when the presented personalization is perceived as relevant (Ho and Bodoff 2014; Ho and Tam 2005). Besides consumers assessing the presented product more thoroughly, the extended advertising elaboration also induces a more thorough assessment of the presented advertising message. Previous research has shown that consumers' browsing modes influence how they perceive and evaluate information (Moe 2003). Therefore, consumers are more likely to rationally assess the advertising message when confronted with utilitarian communication. This is likely to increase consumers' privacy concerns resulting from explicit targeting as they evaluate the presented message more thoroughly. The communicated fact-based message resembles a hard sell approach (Bass et al. 2007).

Conversely, the negative effect of priming the use of personal information to target users may be alleviated when transmitted in conjunction to the hedonic benefits of the advertised product. In such a case, conveying an affective message about intangible benefits of the product is a softer approach to promoting the product; therefore users are less sensitive to the use of their personal information. We hypothesize that:

Hypothesis 3 (H3): *Advertising utilitarian product benefits negatively moderates (reinforces) the negative effect of explicit targeting messages on advertising effectiveness.*

Research Methodology

To examine the impact of explicit targeting and ad message framing on advertising effectiveness, we conducted a field experiment in collaboration with a corporate partner in Western Europe. We ran a mobile advertising campaign for a mobile application. The advertising campaign was executed on the social networking website of Facebook. Facebook allows registered users to create a profile, upload content (photos and videos), exchange messages and communicate with other peers. Facebook has more than 900 million daily active users (Facebook 2015). Most of Facebook's revenue comes from paid social advertising. Due to the large amount of active users, social advertising has become a very important marketing tool for many companies. Companies can use user information (demographics, specific interests revealed from personal profiles) to target consumers. The use of such information increases message relevance for the targeted consumers, and as a result companies increase their advertising click through rates, especially when the ads are targeted based on location, content, or web pages visited (Curran et al. 2011). Nevertheless, the use of such information from Facebook by third parties (i.e. advertisers) has triggered concerns regarding privacy violations. To address this issue, Facebook implemented several policies to protect users. (1) Advertising targeting is anonymous, meaning that advertisers specify targeting options for their ads and Facebook automatically matches these settings to the appropriate audience. (2) Advertisers only receive anonymous aggregate data reports that cannot be

traced back to specific individuals (Tucker 2014). Facebook allows companies to specify different campaigns with different objectives, such as promoting a Facebook page, promoting a company's posts, creating traffic to a company's website, or increasing app installations.

The focal product of the campaign in this study was a mobile app that allows users to digitally store their loyalty cards from various retailers. Using this app, users do not have to carry their (physical) loyalty cards in their wallets, but instead, they can scan them and use their smartphone in their transactions with the respective retailers. The application had more than 100 loyalty cards in its database and retailers offered exclusive promotions to the app users. Consumers that were confronted with the advertisement and decided to click on the "Install Now" button of the ad were redirected to the app store to download the app. In our dataset we recorded consumers' clicks and app installs. Although app installs are conceptually independent from clicks - consumers can also view an ad and decide later to visit the app store themselves without having clicked on the ad - there is a high correlation between the two measures. The reasons for this is that reaching the app store page of the loyalty card app by clicking the ad is substantially more convenient – consumers are simply redirected – than visiting the page individually. Individual access to the loyalty card app requires consumers to remember the name of the app to search for it within the app store interface creating a search cost barrier to reach the page independently.

We used a 2×2 between-subject experimental design in our mobile application advertising campaign to assess the implications of explicit targeting and ad message framing. The advertising campaign was targeted to Facebook users in a Western European country. The experiment lasted for 14 days. We manipulated explicit targeting (1=included vs. 0=not included) and the advertising message framing (1= utilitarian vs. 0=hedonic). To make sure the advertising messages are personalized, we targeted only users who had expressed an interest in a specific product category. Such interests can be based on self-disclosed profile information as well as relevant product pages that the users have liked in the past. Three product categories were chosen for the study: sports, fashion and utility stores. For example, we targeted users with an advertisement regarding the loyalty cards of fashion stores, only if they had expressed an interest in fashion related pages and stores on Facebook, or if they had expressed the interest in fashion on their profile pages.

In the explicit targeting condition, the advertisement message communicated that the advertiser knows the users' personal information and thus promotes the specific app. In this condition, the advertised message started with: "Do you like [sports/fashion/utility]?" In the alternative condition, such a cue was not present (explicit targeting not included). The use of such an indirect question is in line with the construct of "soft-sell" (subtle and indirect messages), which compared to "hard sell" advertising (more direct approach) is considered more persuasive (Okazaki et al. 2010). Regarding advertising message framing, in the conditions where the hedonic benefit was advertised, the advertising message highlighted the fun component of using the advertised application: "Shopping for [sports/fashion/utility] will be more fun with [name of app]!" For utilitarian benefits, the advertising promoted the usefulness of having all the loyalty cards in one application: "All your [sports/fashion/utility] store cards directly available in [name of app]!"

Running these experimental conditions in parallel, may lead to cases where users are exposed to multiple treatments. To alleviate this concern, we created 12 mutually exclusive user groups based on the specified geographical area of the user (self-disclosed profile information). The 12 (urban) areas of the country were comparable in terms of demographics and potential reach within a certain product category. Given that the groups were created based on expressed interest in the respective product category, there were no differences in terms of consumer characteristics between users across the various areas. Table 1 presents an overview of the experimental study. We distributed the different versions of the advertisement campaign to different geographical areas. Each user was exposed to only one of the treatments. We excluded users that had already liked or downloaded the mobile application from receiving advertisements.

Table 1. Experimental Design				
Ad Type	**Personalization**	**Message Framing**	**City***	**Advertising Message**
1	Explicit	Hedonic	City 1 (S) / City 2 (F) / City 3(U)	Do you like [enter product category here]? Shopping for [enter product category here] will be more fun with [enter name of app here]!
2		Utilitarian	City 4 (S) / City 5 (F) / City 6(U)	Do you like [enter product category here]? All your [enter product category here] store cards directly available in [enter name of app here]!
3	Not Explicit	Hedonic	City 7 (S) / City 8 (F) / City 9 (U)	Shopping for [enter product category here] will be more fun with [enter name of app here]!
4		Utilitarian	City 10 (S) / City 11 (F) / City 12 (U)	All your [enter product category here] store cards directly available in [enter name of app here]!

Note. * S=Sports, F=Fashion, U=Utility

We analyze our data on an ad impression level as Facebook does not allow advertisers to extract individual consumer level data from its ad reporting tool. For the experiment, we set up our Facebook campaigns so that our dataset consists of 5 unique dimensions with several levels for which we can extract data on a daily level. This leads to: Targeting (2) × Message Framing (2) × Product Category (3) × Age Group (5) × Gender (2) × Date (14) = 1,680 unique combinations of ad attributes. As the row combinations are unique and we can identify all variables in focus we can replicate our data on an impression level by duplicating each row in accordance to its number of impressions. We then create a binary variable indicating whether an ad was clicked or not and make sure that the number of rows with a click for each unique ad attribute combination matches the number of clicks that a particular unique row combination achieved.

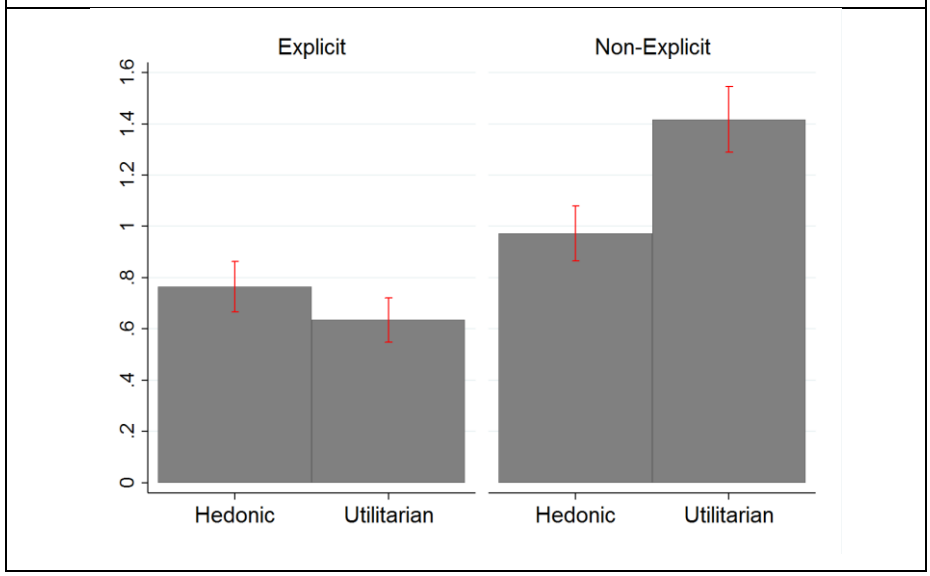
Analysis and Results

In this section, we first discuss the results related to explicit targeting and ad message framing. Second, we present some additional analyses to check the robustness of the results across product categories, gender, and age groups. The descriptive statistics of the variables are shown in Table 2.

Table 2. Summary Statistics					
Category	Impressions	Clicks	CTR	App Installs	Installs | Click-Through
Non-Explicit / Utilitarian	32,808	465	1.42%	179	0.55% (38.5%)
Non-Explicit / Hedonic	31,969	311	0.97%	120	0.38% (38.6%)
Explicit / Utilitarian	32,595	207	0.64%	88	0.27% (42.5%)
Explicit / Hedonic	30,305	234	0.77%	73	0.24% (31.2%)
Total Impressions	127,677	1,217	0.95%	460	0.36% (37.8%)

Model-free evidence (Figure 1) provides insights into the average click rates for the treatment combinations. Overall, we find that utilitarian ad message framing leads to a significantly higher click rate (ΔM = 0.16, t = 2.86, p = .002) while explicitly targeted ads perform significantly worse than non-explicitly targeted ads (ΔM = 0.50, t = 9.20, p < .001). When zooming into the combinations of the different treatments as depicted in Figure 1 we find that the negative effect of explicit targeting is enhanced by utilitarian ad message framing. While explicitly targeted hedonic messages perform better than explicitly targeted utilitarian messages (ΔM = 0.13, t = 1.96, p = .02), non-explicitly targeted hedonic messages perform worse than non-explicitly targeted utilitarian messages (ΔM = 0.44, t = 5.20, p < .001). To control for the potential influence of other factors we move on to estimate logistic regression models.

Figure 1. Click Rate (%) for Treatment Combinations (n=127,677)



Model Specification

Since Facebook offers anonymized aggregate data at the campaign level, the first task is to disaggregate the dataset into an individual response level. Although we cannot trace back personal information of every individual, Facebook offers aggregate information across gender and age groups. We are able to disaggregate the dataset to the impression level and link advertisement and user specific information.

Our model estimates the probability of clicking on an advertisement for each advertisement impression, which we denote as $PClick_i$. We model the latent probability of clicking an advertisement as a logit function of *explicit targeting* and *utilitarian framing*, using the following specification:

$$PClick_i^{Ad} = \frac{\exp(U_i^{Click})}{\exp(U_i^{Click}) + 1}$$

$$U_i^{Click} = \alpha_i + \beta_1 Explicit\ Targeting_i + \beta_2 Utilitarian\ Framing_i + \beta_3 Explicit\ Targeting_i \times Utilitarian\ Framing_i + \theta \times X_i + \delta_i + \varepsilon_i$$

In the above specification U_i^{Click} denotes the latent utility of clicking on an ad. α_i is the constant. We included two binary variables that measure the effect of explicit targeting (*Explicit Targeting*) and advertised utilitarian benefit (*Utilitarian Framing*). X_i is a vector of consumer controls (i.e., gender, age) that accounts for consumer heterogeneity. The vector θ represents the associated coefficients. To control for users' different timing of exposure to an ad, we included the vector δ_i, which accounts for fixed effects

for the day of the week and the day count. ε_i consists of the idiosyncratic error terms. We assume an independent and identically distributed extreme value distribution of the error term in the logit model.

The key empirical results of our models are summarized in Table 3. The dependent variable is an individual user's decision to click on the advertisement. The first column includes only the control variables as the baseline predictions. In the second column we add the treatments of our study (explicit targeting and utilitarian ad message framing). In column (3) we include the interaction effect between explicit targeting and utilitarian ad message framing. The parameter estimate for the effect of explicit targeting is negative and significant compared with not making the targeting mechanism explicit to users ($\beta_{\text{Explicit Targeting}}$ = -0.286, p < 0.001). This finding supports hypothesis H1, and suggests that informing users about the use of their personal information, indicating the awareness of their interest for a specific product (category), reduces the propensity of users to click on the ad. The estimate for advertising utilitarian benefits of the app is positive and significant compared to hedonic benefits ($\beta_{\text{Utilitarian Framing}}$ = 0.295, p < 0.001), supporting H2. Communicating cues related to the usefulness of the app rather than its entertaining appeal increases the persuasiveness of the message and, therefore, the probability of clicking the ad. The parameter estimate of the interaction is negative and significant ($\beta_{\text{Explicit Targeting} \times \text{Utilitarian Framing}}$ = -0.430, p < 0.001), supporting H3. Reversely, this suggests that the negative effect of explicit targeting is attenuated if the hedonic benefits of the app are communicated. The model including the experimental treatment effects shows a significant improvement in terms of fit (Likelihood Ratio Test: chi^2 = 94.90, p < 0.001). In column (4) we estimate the model using a probit estimator. The results of the probit model are consistent with the findings of the logit estimation. Lastly, in column (5) we estimate a linear probability model in which coefficients can be interpreted more easily. Again, results are consistent with our focal model.

As the interpretation of interaction effects in non-linear probability models such as logit is not trivial and the algebraic sign of the coefficient might differ from the algebraic sign of the interaction term (Ai and Norton 2003; Goldfarb and Tucker 2011), we estimate the marginal effects for the interaction of explicit targeting and utilitarian ad message framing. We find that, consistent with our main model, the marginal effect of the interaction between explicit targeting and utilitarian ad message framing is negative.

Table 3. The Effect of Explicit Targeting and Advertised Benefits

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Logit	Logit	Logit	Probit	Linear
Explicit Targeting		-0.515***	-0.286***	-0.110***	-0.002***
		(0.060)	(0.087)	(0.032)	(0.001)
Utilitarian Framing		0.136**	0.295***	0.112***	0.004***
		(0.058)	(0.074)	(0.028)	(0.001)
Explicit Targeting × Utilitarian Framing			-0.430***	-0.159***	-0.004***
			(0.121)	(0.045)	(0.001)
Control Variables	Yes	Yes	Yes	Yes	Yes
Day of the Week Fixed Effects	Yes	Yes	Yes	Yes	Yes
Day of the Campaign Fixed Effects	Yes	Yes	Yes	Yes	Yes
Product Category Fixed Effects	Yes	Yes	Yes	Yes	Yes
Constant	-6.224***	-6.000***	-6.092***	-2.898***	-0.003
	(0.522)	(0.524)	(0.524)	(0.184)	(0.003)
Observations	127,677	127,677	127,677	127,677	127,677
R-squared					0.004
pseudo R-squared	0.027	0.033	0.034	0.034	
Log-Likelihood	-6677.11	-6635.95	-6629.66	-6629.12	
Chi2	393.631	482.506	496.051	472.058	

Note. Robust standard errors in parentheses; * p < 0.05, ** p < 0.01; Control Variables: Gender, Age Group.

Table 4. Robustness Check: The Effect of Product Category				
VARIABLES	(1) All Categories	(2) Sports	(3) Fashion	(4) Utility
Explicit Targeting	-0.353**	-0.746***	-0.355**	0.094
	(0.172)	(0.162)	(0.172)	(0.135)
Utilitarian Framing	0.496***	0.196	0.483***	0.220*
	(0.135)	(0.121)	(0.137)	(0.130)
Explicit Targeting × Utilitarian Framing	-0.542**	-0.223	-0.527**	-0.437**
	(0.231)	(0.221)	(0.231)	(0.193)
Sports	0.288**			
	(0.144)			
Utility	0.285*			
	(0.147)			
Explicit Targeting × Sports	-0.400*			
	(0.236)			
Explicit Targeting × Utility	0.458**			
	(0.219)			
Utilitarian Framing × Sports	-0.307*			
	(0.181)			
Utilitarian Framing × Utility	-0.275			
	(0.188)			
Explicit Targeting × Utilitarian Framing × Sports	0.331			
	(0.319)			
Explicit Targeting × Utilitarian Framing ×Utility	0.097			
	(0.301)			
Control Variables	Yes	Yes	Yes	Yes
Day of the Week Fixed Effects	Yes	Yes	Yes	Yes
Day of the Campaign Fixed Effects	Yes	Yes	Yes	Yes
Product Category Fixed Effects	Yes	Yes	Yes	Yes
Constant	-6.195***	-5.513***	-5.004***	-4.203***
	(0.532)	(0.302)	(0.280)	(0.569)
Observations	127,677	39,699	43,821	43,586
pseudo R-squared	0.037	0.041	0.046	0.030
Log-Likelihood	-6612.96	-2162.32	-1990.74	-2433.77
Chi2	517.60	196.50	196.90	167.91

Note. Robust standard errors in parentheses; * p < 0.05, ** p < 0.01; Product Category: Baseline = Fashion; Control Variables: Gender, Age Group

Robustness Checks

Consumers that clicked on the ad were redirected to the app store page of the application where they could install the app. We were able to identify the consumers that were exposed to one of the ads of our study, and decided to download the mobile app. Understanding the effectiveness of our treatment variables on actual conversion is essential from a managerial perspective. App installs could be practically independent from clicks based on the following rationale. Consumers can also view an ad and decide later to visit the app store themselves without having clicked on the ad. Therefore we first specified the model of the probability of installing the app given the exposure of the advertising for each visitor. Similarly to the model on clicking probability, we found that explicit targeting reduces the likelihood of an app install resulting from an advertising impression. Utilitarian message framing increases the likelihood of an app installation with no further interaction effects. However, the decision to install an app may also depend on clicking the ad. Such evidence can be reflected on the high correlation between clicks and installs (0.60). Therefore, we conducted two additional analyses. First, we conducted a logit model on app installs only for the consumers who clicked on the ad (N=1846). We find that there is no additional effect from the ad treatment variables on installs. Such a result reflects the importance of focusing on ad click behavior, which in turn has a strong positive effect on the probability of app installs. Second, we conducted a two-stage Probit model with sample selection, where the first stage decision is to click or not, and the second stage is app install conditional on clicking. The results confirmed the conclusions from the previous point.

We conducted the field experiment across three distinct product categories and found that overall, explicit targeting and utilitarian ad message framing influences the probability of clicking on an advertisement. However, the three product categories may also differ in terms of hedonic and utilitarian nature. For example, utility stores may be considered as rather utilitarian, since they offer functional products. Respectively, fashion stores may entail relatively increased hedonic elements, since clothing has been associated to experiential needs (Voss et al 2003). According to Hirsh et al (2012) ads are more persuasive when they are tailored to reflect the interests of the intended audience. Thus, the effectiveness of these ads may be attributed to the fit between the nature of the product category (hedonic vs. utilitarian) and the benefits advertised in the advertisement (hedonic vs. utilitarian). Therefore, we investigated whether the effects of explicit targeting and advertised benefits differ across these categories (Table 4). By including interaction terms between the product categories and the experimental treatments, we found that the effects of explicit targeting and utilitarian framing remain robust. Further, we found differences on the effectiveness of ad explicitness on ad effectiveness. More precisely, whereas for sports and fashion, ad explicitness has a negative effect on the probability of clicking the ad, this effect disappears in the utility category. Further, utilitarian message framing has a positive effect on clicking probability (contingent on the non-explicitness of the ad).

Moreover, we examined the extent to which the main findings can be attributed to gender differences. Previous evidence showed that females are more concerned about privacy issues and are more sensitive to the use of personal information compared to males (Sheehan 1999). Therefore, we included the interaction of gender with the effects of explicit targeting and advertised benefits (Table 5). We found that, consistent with the literature, females are less likely to click on an advertisement, and even less when the advertiser explicitly primes the targeting source in the advertising message. This supports the notion that consumer privacy concerns are a driver for decreasing advertising effectiveness when explicitly mentioning the advertising targeting. We finally conducted analyses accounting for differences across various age groups, but the hypothesized effects remained robust and no additional interaction effects were significant.

Table 5. Robustness Check: The Effects of Gender

	(1)	(2)
VARIABLES	Logit	Logit
Explicit Targeting	-0.286***	-0.130
	(0.087)	(0.113)
Utilitarian Framing	0.295***	0.309***
	(0.074)	(0.101)
Explicit Targeting × Utilitarian Framing	-0.430***	-0.589***
	(0.121)	(0.162)
Female	-0.810***	-0.722***
	(0.063)	(0.117)
Explicit Targeting × Female		-0.399**
		(0.181)
Utilitarian Framing × Female		-0.024
		(0.149)
Explicit Targeting × Utilitarian Framing × Female		0.396
		(0.248)
Control Variables	Yes	Yes
Day of the Week Fixed Effects	Yes	Yes
Day of the Campaign Fixed Effects	Yes	Yes
Product Category Fixed Effects	Yes	Yes
Constant	-6.092***	-6.138***
	(0.524)	(0.525)
Observations	127,677	127,677
pseudo R-squared	0.034	0.035
Log-Likelihood	-6629.66	-6626.51
Chi2	496.05	481.55

Note. Robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$; Control Variables: Age Group

Conclusion

Discussion of the Findings

The purpose of this study is to determine the effectiveness of explicit targeting in conjunction with the framing mechanism of the advertised product benefits (hedonic versus utilitarian) in the context of personalized advertising. This study is conducted in a social network environment allowing for a setting where personalized advertising is non-trivial. Social advertising allows advertisers to target consumer groups based on their interests and respectively personalize advertising messages according to such information (Chen and Stallaert 2014; Tucker 2012). While targeting mechanisms have proven to be effective (Bleier and Eisenbeiss 2015), we investigate, in light of recent privacy concerns (Belanger and Crossler 2011; Smith et al. 2011), whether advertisers can leverage the positive impact of targeting by making the targeting mechanism explicit in a personalized advertising message. Additionally, we examine how the nature of advertised product benefits (hedonic versus utilitarian) leads to different advertising clicking behaviors. Hedonic benefits have shown tremendous effectiveness in tapping into the persuasiveness of consumer-product affective bonds, yet evidence suggests that mobile advertising differs in nature from traditional advertising (Bart et al. 2014).

We used between-subject field experiment in which we promote the adoption of a mobile application. We targeted social network users based on their interests revealed on their Facebook profiles. We define advertising effectiveness in terms of the likelihood of consumers to click on an advertisement. Our results suggest that making the targeting mechanism behind the personalized advertisement explicit decreases consumers' likelihood to click on an advertisement. Although priming the personalization mechanism by explicitly mentioning the consumer's interest in the advertising message should normatively increase advertising relevance as well as the consumer's informedness about the targeting mechanism the firms employ (and hence the likelihood of clicking), the risk of increasing privacy concerns outweighs the gains in advertising relevance. Such a behavioral response is in line with the emerging prevalence of consumer privacy concerns (Belanger and Crossler 2011; Smith et al. 2011), as well as the general market advances regarding advertising transparency (e.g. a recent policy trend by major online advertisers such as Google Ads and Facebook is to allow consumers to get information about "why do they see specific ads"). An alternative explanation for the negative effect of explicit targeting on advertising effectiveness is that in the current field study, targeting was based on expressed interests of related pages/brands. However, there are multiple motivations for connecting with a brand on a social networking website. A connection with a brand may be substantial (high interest and connectedness with a brand) or more superficial (liking a brand as a form of social label or driven by social desirability). Recent evidence showed that behavioral targeting works only when the connection between the individual user and the brand/firm is credible (otherwise the personalized targeting is considered inaccurate) (Summers et al. 2016).

Further, we find that the framing of the advertised message in terms of communicating utilitarian benefits of the mobile application in focus increases advertising performance compared to the communication of hedonic benefits. This is the case as information regarding the value of the app needs to be conveyed in an efficient manner when looking at the constraints in terms of length of advertising text. We further show that the framing of the advertising communication towards the product's hedonic benefits alleviate the negative effects of explicit targeting. Essentially, consumers are triggered to elaborate information more rationally when being confronted with a utilitarian message. As consumer privacy concerns are already increased through explicit targeting a rational assessment of the advertising increases consumer reactance towards advertising even further.

Academic and Managerial Contributions

Our research makes contributions to the academic literature in several ways. There is a nascent body of research in IS and marketing dealing with the effectiveness of personalization (Bleier and Eisenbeiss 2015; Chen and Stallaert 2014; Ho et al. 2011; Ho and Tam 2005; Lambrecht and Tucker 2013; Tam and Ho 2006; Xiao and Benbasat 2007). When personal information that is used for advertising targeting is explicitly mentioned in an ad, users react less positive to these ads compared to implicitly targeted ads. This is likely the case as consumers perceive these ads as more intrusive causing consumer privacy concerns. Conceptually, such a finding provides insights into a very important boundary condition of

personalization. Further, this finding contradicts former findings advocating the positive implications of perceived personalization (De Keyzer et al. 2015; Komiak and Benbasat 2006). We find that when consumers are exposed to advertisements that make them more likely to realize that they are targeted based on their personal information; they are less likely to respond favorably. We attribute such a reactance to an ignition of their privacy concerns that may outweigh the positive effect from an increase in advertising relevance.

Next to that, we examine the effect of ad message framing, distinguishing between hedonic and utilitarian framing. Research has shown that products have both utilitarian and hedonic value components (Batra and Ahtola 1990). As advertising space for different types of digital advertising is often limited advertisers need to decide which value component should be communicated to consumers in the ad text. Although conventional advertising wisdom suggests that affective communication increases the persuasiveness of the advertised messages, we show that in the context of personalized mobile advertising utilitarian messages perform better (contingent on not explicitly mentioning targeting information in the ad). Such results extend the academic knowledge on the importance of approaching advertising from a contextual standpoint (Bart et al. 2014; Kenny and Marshall 2000).

In addition, we investigate the potential to mitigate the negative effect of explicit targeting by framing the advertising message in a way of highlighting the potential hedonic benefits of the product. When focusing on the interaction of explicit targeting and advertising message framing we find that framing the advertised message from a utilitarian perspective aggravates the negative effect of explicit targeting. Explicit targeting has less negative implications for advertising messages communicating hedonic product benefits. This is the case as consumers may elaborate advertising messages differently depending on the type of product benefits that are highlighted on the advertising communication. Utilitarian messages are evaluated more rationally, emphasizing consumer reactance and privacy concerns due to explicitly revealing the applied targeting technique. Hedonic messages enable consumers to assess advertisement messages from a more affective perspective and therefore mitigate privacy concerns due to the use of personal information.

Further, this is one of the first studies that investigates the impact of advertising personalization in the context of social advertising on mobile devices. More and more consumers consume online content on their mobile devices. Therefore, advertisers need to find ways to effectively address consumers on these devices. Especially, when advertising a mobile application mobile ads represent the adequate context to allow consumers to get access to the advertised product. Besides researching the effects on click though rate, we were able to investigate the extent to which the advertising treatments have an effect on actual conversions (i.e. installing the mobile application). We show that the effects of explicit targeting and ad message framing on conversion probabilities are driven by consumers click probabilities. This study context is especially crucial due to consumers' extensive use of social media as well as the richness of data on consumer preferences and characteristics in social networks.

This study also provides practical insights that can be used in the application of personalized advertising campaigns. First, firms can use insights from the current study when designing the creative messages in their advertising campaigns. While audience targeting to increase the relevance of personalized advertisements is improving advertising performance, making the personalization too explicit can backfire and lead to consumer reactance. Therefore, especially when advertising a product in an environment where privacy concerns may be increased, the use of non-explicit messages may benefit the firm's advertising effectiveness. Further, the choice of benefits to advertise is very crucial for the performance of an ad. We further offer insights into how to circumvent the limitations when conducting a field experiment in an environment that does not allow randomly allocating subjects into treatment groups.

Furthermore, the environment of the current field study is in a social networking website, yet we believe that the found effects expand beyond that field and can be generalized across different platforms where advertising personalization can be feasibly implemented. Finally, we provide evidence on the advertising effectiveness beyond click through rates by looking at the effects of advertisement components on actual purchase decisions (app installations).

Limitations and Future Research

Despite the above contributions, some limitations of the study provide fruitful opportunities for future research. First, the field experiment provides a solid indication of the behavioral responses of users on the different advertising messages, yet the assumptions regarding their underlying reasoning for clicking on an advertisement need to be further explored. We posit that users' reactance to a personalized message originates in the activation of privacy concerns. However, alternative explanations may apply; for example the (lack of) strength of connectedness between the user and the brand may explain why explicit targeting may not work (Summers et al. 2016). A lab experiment that would allow measuring privacy concerns related to the advertisement as well as an overall privacy sensitivity index could shed light on the process variables that determine such behavioral responses.

Since the context of this study can be in principle considered rather utilitarian, there is a possibility that the reason why utilitarian framing over performs hedonic message framing is due to the fit between the message and the product. However, we believe the results are generalizable beyond the nature of the product for the following reasons. Most products entail a utilitarian and a hedonic component in their value propositions (Batra and Ahtola 1990). The focal application relates to shopping, in a way that it can tease out the resources needed for the utilitarian part of the process (locating the loyalty cards to complete a transaction), hence allowing resources to be allocated to the hedonic value of this activity (e.g. free of worry, enjoyment). Future research could extend this study to more (traditionally) hedonic products (e.g. mobile games).

Future studies can expand the role of advertising personalization by taking consumers' social connections into account. Such information cues trigger a sense of social influence through the homophily of consumers' personal network, and as a result could increase advertising effectiveness or further alleviate the negative effect of explicit targeting. Since the mobile application used in this study was early in its lifecycle (as a result having a limited number of current users at the time), the use of social connections would substantially limit the sample size. It would be interesting to identify the extent to which the effects found here can be generalized in a product with an established market share and larger general awareness.

In the experiment, we split the audience in different geographical areas. This may induce concerns regarding the heterogeneity across treatment groups. It is unlikely that in every geographical area, the residents have the same demographics and act in the same way. The magnitude of every geographical area also differs, resulting in a different reach of people for every ad. We alleviate this issue by targeting consumers based on interests increasing the comparability between treatment groups. By targeting consumers based on an interest that matches one of the three product categories (Fashion, DIY, Sports), we create a homogenous sample, as these people are similar in their interests. Moreover, this field experiment is based on consumers within a single European country and their willingness to click on an advertisement for a newly introduced free mobile application with about 40,000 users at the time of the advertising campaign. Also, the allocation of cities across the different treatments was based on comparable social, economic and demographic characteristics. For future research, it could be interesting to determine if the effects are the same for other product types (e.g. paid apps) and whether our findings are generalizable beyond the context of a mobile application (e.g. website promotion).

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