Ads on Private Information: Investigating the Targeting Trade-Off in Personalized Online Advertising

Abstract

In retargeting, online banners are tailored to individual consumers according to their recent shopping behavior. Although this increasingly employed method might make banners more relevant to consumers, they may also perceive it as overly manipulative or privacy intruding. In this study, we show that consumers' previous trust in a banner's source (its advertising company and display website) eliminates this prevailing "targeting trade-off". In particular, when a company is well-trusted, it can increase its banners' perceived informativeness through high personalization without triggering consumers' negative emotions. In contrast, when the company is lowly trusted, highly personalized banners are not perceived more informative, but instead elicit anger. These outcomes are moreover amplified by consumers' previous trust in the display website on which a banner appears. If both source components are previously not well-trusted, a highly personalized ad erodes trust in them even further. Together, these effects finally explain consumers' behavioral responses to highly personalized banners: While well-trusted companies achieve significant increases in click-through, view-through, and purchase probabilities, lowly trusted firms suffer the direct opposite.

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Introduction

Today's ever growing ad clutter on the Internet has prompted companies to increase their banners' relevance to individual consumers to achieve greater effectiveness. One way to do so is through retargeting, a special technique of ad personalization in which companies track consumers' shopping behaviors in their online stores and then provide personalized banner advertisements as they progress through the Web (Lambrecht and Tucker 2011). This method has gained such momentum over the past few years that today every second Internet user claims having been exposed to retargeted advertising (Purcell, Brenner, and Rainie 2012). Correspondingly, spendings on behavioral targeting will reach $2.6 billion in 2014 (eMarketer 2010). Although individually personalizing a banner to the preferences of a consumer should make the ad more appealing (Ansari and Mela 2003; Lohr 2010; Tucker 2012), 84% of consumers do not want marketers to tailor advertisements to their online behaviors across websites (Turow et al. 2009). Two main aspects might cause consumers' negative attitudes toward retargeting: First, consumers may feel manipulated, placed at a disadvantage compared with other consumers, or deprived of their freedom of choice when perceiving a banner inappropriately close to their preferences (King and Jessen 2010; Turow et al. 2009; White et al. 2008). Second, retargeting involves collecting and analyzing consumers' personal information without their knowledge, which in turn can elicit heavy privacy concerns (Tucker 2012; Turow et al. 2009). As a result, many companies currently presume that highly personalizing their banners to individual consumer interests will indeed increase their ads' effectiveness, but at the same time cause strong disapproval. In turn, this uncertainty often prompts managers to curtail behavioral advertising, although they believe it to vastly improve their company's marketing and sales performance (Lohr 2010; Ponemon Institute 2010).

However, in the following, we demonstrate under which circumstances this fear is not warranted. We show that previous trust in the source of a banner (i.e., its respective advertiser and display website[1]) can effectively eliminate the prevailing "targeting trade-off," in which a more informative ad comes at the expense of negative responses to its personalization approach. In particular, we find that a banner with a high degree of content personalization (DCP) is beneficial for an advertiser that is well-trusted, leading consumers to perceive its ad as more informative than a generic banner. Conversely, if the advertiser is not well trusted, consumers will not perceive a highly personalized banner as more informative but become angry. For its part, the banner-displaying website amplifies these positive and negative perceptions. Furthermore, personalizing a banner affects trust in its source. If advertisers and display websites are previously not well trusted, highly personalizing a banner further erodes consumers' trust in both parties. Finally, perceptions of the banner and trust in its source significantly determine consumers' behavioral responses: While well-trusted companies achieve significant increases in click-through, view-through, and purchase probabilities, lowly trusted firms suffer the direct opposite.

By studying trust in the context of personalized online advertising, we cater to a current MSI research priority which calls to empirically investigate the impact of trust on the ability to do business for companies that deal with personal data (Marketing Science Institute 2012).

We begin with a brief introduction on the method of retargeting. Then, we introduce our conceptual framework and derive corresponding hypotheses. Next, we present our model results, based on an online experiment. Last, we conclude with a discussion of contributions to theory and practice.

Personalized banner advertising

[1] In this article, the advertiser is the company whose products and/or logo are featured in the banner that appears on a specific display website.

In retargeting, banners are personalized according to the specific consumer's previous browsing and shopping behavior in a company's online store to better align with his interests and preferences. At the lowest DCP, a banner may feature only the company logo, catering to the idea that the consumer is generally interested in the firm's products. Utilizing further tracked information, a higher DCP might include random products from a viewed category or brand. Finally, showing the exact products viewed represents the highest DCP (Bleier and Eisenbeiss 2011).

Despite several industry studies on this increasingly applied method, academic research on its effectiveness and determinants remains sparse. In a pioneering study, Lambrecht and Tucker (2011) show that retargeting only generates more purchases than a generic banner if a consumer has clearly defined product preferences and is actively involved in the advertised product category. More specifically, with respect to click-through, Bleier and Eisenbeiss (2011) find that the effectiveness of a specific DCP depends on the consumer's current position in the purchase funnel. While high DCP generates clicks at an early position in the funnel, a low DCP is more effective as the consumer moves forward. Also incorporating view-through and purchase intention, Bleier and Eisenbeiss show that retargeting only releases its full potential when banners appear on websites with a shopping context.

However, despite these first promising steps toward a better understanding of retargeting and its effects, the targeting trade-off has yet to be resolved. One possible solution might stem from the characteristics of the banner's source. Advertising and persuasion research regards attitudes and dispositions toward a message's source as crucial for its effectiveness (e.g., Simons, Berkowitz, and Moyer 1970; Woodside and Davenport 1974). In particular, trust in a source significantly determines the impact of a message on a receiver (McGinnies and Ward 1980). Moreover, research frequently highlights the importance of trust especially in the online

environment and e-commerce (e.g., Gefen 2000; Hoffman, Novak, and Peralta 1999). When further information about companies on the Internet is lacking, trust serves as the key foundation on which consumers base their research and purchase decisions and represents an essential driver of success for any company (McStay 2011; Urban, Amyx, and Lorenzon 2009; Urban, Sultan, and Qualls 2000).

Having said this, we argue that previous trust in a banner's source might be a key factor to govern the targeting trade-off as a prevailing setback in banner personalization. To this end, we propose the conceptual model depicted in Fig. 1. We ground our model on the stimulus–organism–response (S-O-R) paradigm (Donovan and Rossiter 1982; Mehrabian and Russell 1974) and the heuristic-systematic model (Chaiken 1980, 1987; Chaiken, Lieberman and Eagly 1989). Accordingly, a personalized banner constitutes a stimulus that affects the cognitive and affective internal states of a consumer organism through a systematic and heuristic mode. These states account for the consumer's evaluations of the banner itself and its underlying personalization procedure. Subsequently, these internal states translate into the consumer's behavioral responses. In the following subsections, we first delineate the stimulus–organism relationship—that is, consumers' evaluations of the personalized banner and the underlying personalization procedure. We then turn to the organism–response relationship to explain the behavioral responses caused by the internal states.

[Insert Figure 1 about here]

Evaluations of the banner

Following persuasion research, consumers' evaluations of a banner derive distinctively from its content and characteristics of its source (Chaiken 1980). With respect to content, a banner's impact on a consumer should depend on its DCP, or the extent to which it mimics the

consumer's interests and preferences according to his previous shopping behavior. Regarding its source, a consumer's previous trust in the banner's advertiser and the website on which the banner appears should also play an important role (Aaker and Brown 1972).

According to the heuristic-systematic model (Chaiken 1980, 1987; Chaiken, Lieberman and Eagly 1989), consumers can process a banner simultaneously along a systematic and heuristic mode, with independent or interactive effects on their evaluations (Chaiken and Maheswaran 1994). Through the systematic mode, consumers actively process the banner's content by analytical thought and cognition (Chaiken 1980). This cognitive processing should be evoked by a retargeted banner, regardless of its DCP, because it is assembled according to the consumer's interests and thus always more relevant than a nontargeted banner (Jensen et al. 2012; Petty and Cacioppo 1986). Jensen et al. (2012) show that consumers perceive an individually tailored message as more informative than a stock message. Therefore, they should also evaluate a highly personalized banner as more informative than a banner with a lower DCP. While processing a banner through the systematic mode, a consumer can simultaneously process it through a heuristic mode (Chaiken and Maheswaran 1994). This mode requires less cognitive effort because the consumer relies primarily on previously learned shortcut decision-making rules, or so-called heuristics (Chaiken 1980; Dillard and Peck 2000). An important heuristic is the consumer's trust in the source of a message, such that a trustworthy source is persuasive whether it is an expert or not (McGinnies and Ward 1980). Especially in the online environment, trust is a crucial source of information for consumers (Urban, Amyx, and Lorenzon 2009; Urban, Sultan, and Qualls 2000). In e-commerce, consumers' intentions to adopt a recommendation agent and its perceived usefulness are significantly determined by their previous trust in the agent (Komiak and Benbasat 2006; Wang and Benbasat 2005). Analogously, if a consumer trusts a banner's source, he can be expected to welcome the ad and its high DCP in general. In addition to directly

affecting the consumer's banner evaluations in this manner, the heuristic mode can also bias the systematic mode (Chaiken and Maheswaran 1994). As such, the consumer's heuristic appreciation of the banner positively influences his cognitive evaluation of its informativeness. Because a banner's advertiser is the source component that, compared to its display website, predominantly determines the ad's impact on a consumer (Choi and Rifon 2002), we propose the following:

H1. A high DCP will increase a banner's perceived informativeness if a consumer previously trusted the advertiser.

Along with the characteristics of the advertiser, attributes of the website on which the banner appears may affect its influence on consumers (Aaker and Brown 1972; Choi and Rifon 2002; Fuchs 1974; Yi 1990). When framing a trusted environment, the banner-displaying website should therefore function as a catalyst of the advertiser's positive source effects:

H2. The increase in a highly personalized banner's perceived informativeness will be amplified if a consumer also previously trusted the display website.

In contrast, if a consumer's trust in the source of a banner is low, heuristically, he is not likely to welcome its highly personalized recommendations. In such a case, the consumer might perceive the banner as overly manipulative, intrusive or encroaching, resulting in a perceived threat to his freedom (Brehm 1966; Brehm and Brehm 1981; Edwards, Li and Lee 2002; Tucker 2012; White et al. 2008). In turn, this perceived threat can trigger the widely discussed psychological state of reactance (Brehm 1966; Brehm and Brehm 1981). Although discussion persists on the measurement of the precise discomfort experienced in this internal state (Brehm 1966; Brehm and Brehm 1981; Dillard and Shen 2005; Hong and Faedda 1996; Tucker 2012), anger is the most applicable emotion in capturing the arising negative affect (Choi, Jiang, and

Yap 2012; Dillard and Shen 2005; Nabi 1999). In addition to the banner's direct effect on anger, its negative heuristic perception will likely exert a downward bias on the consumer's cognitive evaluation of its informativeness (Chaiken and Maheswaran 1994). Thus, if a consumer had a previous low level of trust in its advertiser, he will not perceive a highly personalized banner as more informative but instead become angry. Thus, we propose the following:

H3. A banner with a high DCP will elicit anger if a consumer's previous trust in the advertiser was low.

Analogous to H2, if the banner is displayed on a website that also frames a low-trust environment, the negative source effect of the advertiser should be amplified:

H4. A consumer's anger will be more pronounced if his previous trust in the banner's display website was also low.

Evaluations of the personalization procedure

A crucial determinant for the success of a company–consumer relationship is the consumer's enduring trust in the entity (Hoffman et al. 1999; O'Malley, Patterson, and Evans 1997). Trust arises from the belief in another's goodwill and is based on past experiences (Jones 1996). Thus, a consumer's evaluation of the company's banner personalization procedure should influence his trust in the company. Trust can be affected through a systematic and heuristic mode as well (Koh and Sundar 2010; Salo and Karjaluoto 2007; Yang et al. 2006).

Contrary to other ad personalization techniques, in retargeting, the advertising company secretly tracks an individual's shopping behavior in its online store. Permission for this practice is seldom solicited, so a consumer is usually not aware of these undertakings until he receives a personalized communication (Sheehan and Hoy 2000). To the consumer, the banner's DCP then

serves as a proxy for the extent of privacy intrusion and determines his perceived level of control loss and vulnerability to the company (Taylor, Davis, and Jillapalli 2009). The cognitive discovery of being secretly tracked and analyzed may then form a crossroads for his future relationship with the firm, where previous trust becomes the determining factor (Luo 2002). If the consumer previously trusted the advertiser, he will probably accept vulnerability to the company, expecting it to act with the good intention of trying to understand his preferences to provide more informative banners (Rousseau et al. 1998). However, with low trust in the company, heuristically, a consumer should not suspect underlying positive intentions by the company. Instead, significant privacy concerns should be triggered. Thus, the cognitive assessment of the company's personalization procedure is then negatively biased by the heuristic mode. Prior research has shown such evaluations to reduce trust in a company (Eastlick, Lotz, and Warrington 2006):

H5. A banner with a high DCP will decrease a consumer's trust in the advertiser if his previous trust was already low.

Consumers are often unaware of the actual process by which companies track their data when they browse the Internet (Lohr 2010; Sheehan and Hoy 2000). Thus, if a highly personalized banner from a lowly trusted advertiser appears on a website that is also not well-trusted, a consumer should perceive the occurrence as especially privacy threatening. Indeed, he may feel spied on at the very moment of the ad impression. Thus, we expect another intensification of effects:

H6. The decrease in trust in the advertiser will be amplified if a consumer's previous trust in the display website was also low.

The highly personalized ad might finally also affect the relationship between a consumer and the website on which the banner appears (Moore, Stammerjohan, and Coulter 2005). Here, if the consumer's trust in the advertiser was previously low, he could be underwhelmed by the display website because it allows such a privacy intruding banner on its site. As a result, the consumer is highly likely to lose trust in the website:

H7. A banner with a high DCP will decrease a consumer's trust in the display website if his previous trust in the advertiser was low.

Behavioral responses

Following internal processing and evaluations of the banner stimulus, a consumer's resulting behavioral responses represent the final outcomes according to the S-O-R paradigm (Donovan and Rossiter 1982; Mehrabian and Russel 1974). Triggering desired behavioral responses is of high relevance to companies because they reflect a banner's measurable effectiveness. We first incorporate click-through as the most direct response and most widely used measure of online ad effectiveness (PricewaterhouseCoopers 2010). Although click-through is conceptually convincing and technologically easy to employ, empirical evidence suggests that banners are effective even when consumers do not click on them (Briggs and Hollis 1997; Drèze and Hussherr 2003; PricewaterhouseCoopers 2010). We therefore also include view-through, a popular, less immediate response which refers to consumers' return to an advertiser's homepage, without having clicked on the banner (Yaveroglu and Donthu 2008). For many companies, view-through is especially meaningful when the principal focus of their banner campaigns is branding (Bruner and Gluck 2006). Finally, we incorporate purchase which is a widely used response to measure advertising effectiveness that has also been examined in the context of retargeting (Assmus, Farley and Lehman 1984; Lambrecht and Tucker 2011).

Previous research has extensively investigated particular effects between constructs of our model's organism–response relationship (e.g., Bunker and Bartholomew 2010; Eastlick, Lotz, and Warrington 2006; Kim, Ferrin, and Rao 2007; Lee, Kim, and Moon 2000; Pavlou 2003; Salo and Karjaluoto 2007; White et al. 2008). Moreover, our primary focus lies on investigating the effects of retargeting and source trust on a consumer's internal states. We therefore do not provide formal hypotheses for behavioral responses, but include the intentions to conduct each response in our model and discuss the empirical findings to draw a complete picture.

Experimental study

Experimental design and procedure

To test our conceptual model, we conducted a scenario-based online experiment with a 2 (high vs. low DCP) × 2 (previously well-trusted vs. lowly trusted advertiser) × 2 (previously well-trusted vs. lowly trusted display website) between-subjects design. Previous research has frequently used scenario-based studies to test the effects of advertising on consumers (Fisher and Dubé 2005; Mitra and Lynch 1995).

First, participants were randomly assigned to one of the treatment conditions. To begin the experiment, they read a short introduction asking them to imagine that they were going to purchase a book online. Next, participants were led through the corresponding browsing scenario. The shopping trip started at a search engine with the query "books thriller" where they clicked on the first online bookstore that appeared. This online shop was either well trusted or not, depending on the treatment group. The following page showed the detail page of a particular thriller within this online store. Because they were told that they could not yet make up their minds about purchasing the book, participants sought distraction by returning to the search engine and retrieving a certain movie review. Again, they followed the first link that appeared

and entered a journalistic website that contained the review. Depending on the treatment group, this website was either well trusted or not. At this website, participants were told to read the short movie review, above which a banner was placed. In the high-DCP treatment groups, the banner contained the book that was previously viewed in the online store alongside the store's logo. In the low-DCP treatment groups, the banner contained only the company's logo. Subsequently, participants filled out an online questionnaire. The measures included evaluations of the banner (informativeness and anger), trust in the banner's source (trust in the advertiser and display website), and intended behavioral responses (intentions of click-through, view-through, and purchase).

Manipulation checks

According to Perdue and Summers (1986), we conducted pretests and performed manipulation checks regarding the stimuli of our scenarios. The final prestudy included 40 graduate and undergraduate students from a major German university. The perceived difference between high versus low DCP conditions was assessed based on answers to the question: "To what extent do you think the banner was personalized to you?" Ratings were obtained on a five-point scale from 1 ("not at all") to 5 ("to a very high extent") and were significantly higher for the high DCP banner ($\Delta M = 1.075$, $t = 6.35$, $p < .0001$). The manipulation of previous trust in the advertiser was assessed with the item "This company is trustworthy" that was rated on a five-point scale from 1 ("I do not agree") to 5 ("I agree"). Ratings for the well-trusted advertiser (Amazon.de) were significantly higher than for the lowly trusted advertiser (booklooker.de) ($\Delta M = 1.700$, $t = 14.87$, $p < .0001$). Last, the manipulation of previous trust in the display website was assessed with the item "This website is trustworthy", rated on the same scale. Again, ratings were significantly higher for the well-trusted display website (Spiegel.de) than for the lowly trusted display website (Cineastentreff.de) ($\Delta M = 1.875$, $t = 10.87$, $p < .0001$).

Sample

The final experiment was conducted with graduate and undergraduate students from a major German university who received no compensation for their participation. After cleansing, 305 valid questionnaires remained in which participants noticed the banner, according to an aided banner-recall question. To analyze the impact of a banner with a high versus low DCP in all combinations of previous trust in the advertiser/display website, we assigned the completed questionnaires to one of four analysis groups: In group 1 ("Hi-Hi", N = 86), both advertiser and display website were well trusted. In group 2 ("Hi-Lo", N = 73), the advertiser was well trusted but the display website was not. Group 3 ("Lo-Hi", N = 75) combines the lowly trusted advertiser and the well-trusted display website. Finally, in group 4 ("Lo-Lo", N = 71), trust in both source components was low.

Measures

We operationalized *informativeness* as a single item adopted from Henthorne, LaTour, and Nataraajan's (1993) attitude toward the ad measure. Here, participants rated whether the banner could be described as "informative" on a scale from 1 ("yes, definitely") to 4 ("no, definitely not"). Using this single-item measure is feasible as we capture a concrete attribute of a concrete singular object. Research shows that in these conditions, there is no difference between the predictive validity of single- and multi-item measures (Bergkvist and Rossiter 2007).

We measured *anger* with four-items: "The advertising irritated me," "The advertising annoyed me," "The advertising made me angry," and "The advertising aggravated me" (Dillard and Peck 2000; Dillard et al. 1996). The five-point scale ranged from 1 ("a great deal of this feeling") to 5 ("none of this feeling"). This measure of anger has especially been applied in the course of investigating reactance (Dillard and Shen 2005). Alpha reliability was .88 in our study.

We operationalized *trust in the advertiser* and *trust in the display website* with a three-item measure from Bruner, Hensel, and James (2005). The items were adapted to the current study and were for trust in the advertiser/display website, respectively: "The company/display website has a good reputation," "This company/display website is trustworthy," and "This company/display website will keep its promises and commitments." The scale ranged from 1 ("I agree") to 5 ("I do not agree"). Respective alpha reliabilities were .90 for trust in the advertiser and .94 for trust in the display website. To ease interpretation, we reversed the scales of *informativeness* and *trust in the advertiser/display website* in the course of our analyses, such that high ratings represented high informativeness and trust, respectively.

We measured behavioral responses with three single-item estimates of the likelihood that the participant would conduct the specific response. This is an established method in S-O-R research (Donovan and Rossiter 1982). The items asked for the respective likelihoods to click on the banner (click-through intention), revisit the online store at a later time (view-through intention), and purchase the book viewed in the online store (purchase intention) on a percentage scale from 1 ("100%") to 11 ("0%") (Dillard and Shen 2005).

All measurement constructs met convergent validity requirements, as Table 1 shows. For each construct, the composite-based reliabilities well exceeded the required threshold of 0.6 (Bagozzi and Yi 1988). The same applied to the average variance extracted with the required threshold of 0.5 (Fornell and Larcker 1981). Finally, *t*-values greater than 1.645 for every item indicated that their factor loadings were significantly different from zero (Bagozzi, Yi, and Phillips 1991).

[Insert Table 1 about here]

Discriminant validity was present, as Table 2 shows. Accordingly, the average variance extracted for every latent construct was greater than the squared correlation of the construct with any other construct (Fornell and Larcker 1981).

[Insert Table 2 about here]

Since all independent variables of the stimulus–organism part of our model were manipulated in the experiment, common method variance posed no problem here. To ensure this for the organism–response relationship as well, we compared the model fit of our measurement model with a single-factor confirmatory factor analysis (Podsakoff et al. 2003). A Satorra–Bentler scaled chi-square difference test indicated a significantly worse model fit of the single-factor model compared with the multifactor model in all groups (group 1: $TRd^2 = 106.861$, $\Delta df = 5$; group 2: $TRd = 90.772$, $\Delta df = 5$; group 3: $TRd = 131.476$, $\Delta df = 5$; group 4 did not converge) so that common method variance was disproved (Korsgaard and Roberson 1995; Mossholder et al. 1998).

Last, as a precondition for comparing mean differences across groups, we tested whether full or partial metric and scalar invariance existed (Steenkamp and Baumgartner 1998). First, an unconstrained confirmatory factor analysis for configural invariance of our multi-item constructs had a good model fit ($\chi^2 = 174.895_{(124\ df)}$, $p < .01$; SCF = 0.987; CFI = 0.966; RMSEA = 0.073; SRMR = 0.059). Here, within *anger*, we allowed the residuals of An1 and An2 to covary. This adjustment was indicated by modification indices and reasonable due to the items' similar German translation. Second, imposing constraints on the factor loadings across groups did not decrease model fit significantly which proved full metric invariance ($\chi^2 = 191.475_{(145\ df)}$, $TRd = 17.703$, $\Delta df = 21$, $p < .01$; SCF = 1.003; CFI = 0.969; RMSEA = 0.065; SRMR = 0.078). Finally, partial scalar invariance was present, as the fit of a model, with all intercepts, except TDW1, constrained across groups, did not decrease significantly compared to the second model ($\chi^2 = 233.460_{(163\ df)}$, $TRd = 41.985$, $\Delta df = 18$, $p < .001$; SCF = 1.003; CFI = 0.953; RMSEA = 0.075;

[2] TRd = Satorra–Bentler scaled chi-square difference test statistic. Throughout this study we used robust maximum likelihood methods which require model fit comparisons to be based on the TRd (Satorra and Bentler 2001).

SRMR = 0.105). Thus, latent means were comparable across groups (Steenkamp and Baumgartner 1998).

Results

To test our hypotheses, we applied a multigroup structural equation model with a group code approach (Aiken, Stein, and Bentler 1994; Jöreskog 1971). In particular, in the first part of the model, representing the stimulus–organism relationship, we estimated group-specific effects of the binary coded DCP variable (1 = high DCP, 0 = low DCP) respectively on informativeness, anger, trust in the advertiser, and trust in the display website. Again, the four analysis groups represent all combinations of trust in the advertiser and trust in the display website. With the binary coding of the DCP variable, the resulting parameter estimates depict the groupwise mean differences between a high versus low DCP in terms of informativeness, anger, trust in the advertiser, and trust in the display website. The results for this first part of the model appear in Table 3, panels (1)–(4). In the second part of the structural model, representing the organism–response relationship, we held all parameters constant across groups, since there was no a priori reason to expect differences between them. Accordingly, panels (5) and (6) show the estimated results for the overall influence of informativeness, anger, trust in the advertiser, and trust in the display website on a consumer's behavioral responses. The structural model has an acceptable fit, allowing for the assessment of our hypotheses ($\chi^2 = 536.111_{(375\ df)}$, $p < .001$; CFI = 0.915; RMSEA = 0.075; SRMR = 0.132).

[Insert Table 3 about here]

Fig. 2 depicts the corresponding graphical illustrations for the stimulus–organism part of the entire model.

[Insert Figure 2 about here]

Addressing consumers' banner evaluations in our first set of hypotheses, we suggested in H1 that increasing a banner's DCP would lead to higher perceived informativeness, if the consumer previously trusted the advertiser. Panels (1) and (2) in Table 3 provide empirical support, with significantly positive coefficients in the Hi-Hi (γ_{11} = .431, t = 2.899, p < .05) and Hi-Lo (γ_{21} = .278, t = 1.840, p < .1) groups. Next, we expected this increase in informativeness to be even more pronounced, if the consumer also had high trust in the banner's display website. Although the difference between the corresponding coefficients is statistically not significant, the size of the Hi-Hi coefficient is almost twice the size of the Hi-Lo coefficient and has a higher associated significance level, which confirms H2 by trend. Conversely, as the nonsignificant coefficients in Panels (3) and (4) indicate, if trust in an advertiser is low, increasing its banners' DCP does not yield higher perceptions of banner informativeness. Moreover, we expected in H3 that a highly personalized banner would elicit anger if the consumer had low trust in the advertiser. Although the coefficient in Panel (3) points in the right direction, anger is not significantly elicited in the Lo-Hi treatment group (γ_{32} = .209, t = 1.098, p > .1); however, Panel (4) shows that the effect is significant in the Lo-Lo condition (γ_{42} = .361, t = 1.949, p < .1). Thus, this finding yields partial support for H3 and fully confirms H4, such that a lowly trusted display website significantly amplifies the negative source effect of a lowly trusted advertiser. Overall, we therefore find previous source trust to effectively eliminate the targeting trade-off, as it determines whether a higher DCP increases a banner's informativeness or elicits anger.

Turning to a banner's impact on consumer trust in our second set of hypotheses, we proposed in H5 that a consumer would further lose trust in an advertiser that shows a highly personalized banner and is previously lowly trusted. As Panels (3) and (4) in Table 3 indicate, both groups with low previous advertiser trust exhibit negative corresponding coefficients; however, effects

are only significant when trust in both source components was previously low (γ_{43} = –.379, t = –2.123, p < .05), but not when trust in the display website was previously high (γ_{33} = –.250, t = –1.484, p > .1). Similar to H3 and H4, this lends partial support to H5 and full support to H6. Again, the amplifying influence of the display website on negative source effects of the advertiser is evident. Empirically, we additionally find that a well-trusted advertiser can actually gain more trust by highly personalizing a banner and displaying it on a lowly trusted website (γ_{23} = .181, t = 1.704, p < .1). This effect might accrue if a consumer appreciates the advertiser's intent to understand his preferences and adjust its banner accordingly; however, surprisingly, the effect is not significant if the ad is displayed on a well-trusted website (γ_{13} = .039, t = .275, p > .1). Without further investigation, it seems that a trusted advertiser might benefit by positively standing out in an environment that is otherwise not trusted. Finally, in H7, we expected trust in the display website to decrease if a banner with a high DCP came from an advertiser that was previously lowly trusted. We find that this effect is only significant in the Lo-Lo group (γ_{44} = –.255, t = 1.671, p < .05), but not in the Lo-Hi condition (γ_{34} = –.139, t = –.931, p > .1), in partial support of H7. This result might suggest that consumers do not hold a well-trusted display website responsible for the advertiser's privacy intrusion; however, if trust in the website is low, consumers might deduce a perilous collaboration between the advertiser and the display website to infiltrate their private data.

Without testing formal hypotheses, we investigated the organism–response relationship. Table 3, Panels (5) and (6), depicts the model results. The corresponding graphical illustrations are shown in Fig. 3.

[Insert Figure 3 about here]

First, with respect to click-through, we find the targeting trade-off to carry through to consumers' behavioral responses: The intention to click on a banner is antagonistically

influenced by the effects of its perceived informativeness (γ_{51} = .777, t = 4.077, p < .001) and the anger it elicits (γ_{54} = –.442, t = –2.788, p < .05). The results from the stimulus–organism relationship show that previous source trust determines which of these internal states is affected by a highly personalized banner and consequently eliminates the trade-off; but, while perceived informativeness also increases view-through (γ_{52} = .647, t = 2.981, p < .05) and purchase intentions (γ_{53} = .445, t = 2.139, p < .05), to our surprise, anger decreases neither of these responses (γ_{55} = .128, t =.520, p > .1; γ_{56} = .064, t =.293, p > .1). Thus, while information derived from a highly personalized banner might be stored in memory to influence subsequent behavior, the emotional state of anger may vanish over time. At first, this could indicate the trade-off to only occur with respect to immediate behavioral responses; however, Panel (6) shows that trust in the advertiser influences not only click-through (γ_{61} = .527, t = 2.324, p < .05), but also view-through (γ_{62} = 1.329, t = 5.287, p < .001) and purchase intentions (γ_{63} = .916, t = 3.696, p < .001). Therefore, if trust in the advertiser is lowered by a highly personalized banner, the trade-off is also valid for these responses. Findings from the stimulus–organism relationship indicate this to occur again in dependence of consumers' previous source trust which therefore eliminates the targeting trade-off with respect to all investigated behavioral responses.

Discussion

Companies are increasingly employing retargeting to assemble highly personalized banners as their new tool of choice to enhance the effectiveness of their online advertising. Nevertheless, some indications reveal possible mixed or negative outcomes so that firms need to determine whether and how retargeting is right for them. Our results suggest that trust in the source of a banner is a crucial determinant of its effects on consumers and a possible solution to the prevailing targeting trade-off. We derive important contributions for theory and practice.

First, the results prove that well-trusted online retailers benefit from closely tailoring their ads to prospective customers. If the advertising company is well trusted, highly personalizing its banners with retargeting leads consumers to perceive these ads as more informative. This positive impact directly translates into significant improvements in banner effectiveness with respect to click-through, view-through and purchase intentions. Moreover, well-trusted advertisers do not need to fear the targeting trade-off. For them, highly personalized ads come neither at the expense of consumers' anger nor loss of trust.

Second, if a company is not well trusted, it should refrain from highly personalizing its banners with retargeting methods. For these companies, our results show no increase in perceived informativeness for highly personalized banners. Moreover, these ads elicit anger, resulting in significant decreases in click-through intentions. Finally, although already low, trust is further jeopardized, in turn also putting view-through and purchase intentions at risk.

All in all, companies need to carefully decide whether and under which circumstances tailoring their ads closely to consumers previous online shopping behavior is a viable option. One way to do so might be to assess their corporate standing in the marketplace. Estimating general consumer trust through market research might be an option. At best, companies should implement ways to determine trust at the individual consumer level, for instance, by installing corresponding measurement tools in their online stores. Subsequently, the degree to which a banner reflects a consumer's interests should be adjusted to his individual trust ratings of the company. This approach could be especially important for firms that deliver personalized banners in advertising networks through "real-time bidding." Real-time bidding is the auction-based sale of advertising space on display websites within an ad network (Clifford 2010). Here, companies bid for single impressions to specific consumers according to the information they

have about them. Incorporating individual consumers' trust in the company might be a highly important aspect for the firm to determine the value of specific bids.

Next, when planning their advertising strategy, online retailers must not only take into account consumers' trust in their company. Our study indicates that trust in the banner-displaying website is also an important factor that determines the impact of personalized advertising on consumers. On the one hand, a well-trusted display website amplifies a banner's gains in perceived informativeness. On the other hand, low trust in the display website also considerably strengthens negative effects, such as the elicitation of anger or loss of trust.

Together, our results contribute to theory by showing that trust in a banner's source is one solution to the currently still unresolved targeting trade-off. For practitioners, we also provide clear implications on how to manage retargeting as a means to improve the effectiveness of their online advertising.

While this research sheds further light on the mechanisms that determine the influences of retargeting on consumers, there are also limitations to be addressed. First, this study provides only a static snapshot of reality. We estimate our model from a single ad impression, while in online advertising, consumers receive multiple impressions over time. Research has shown that banner effects dynamically change with increasing impressions (e.g., Bleier and Eisenbeiss 2011; Braun and Moe 2012), so that our findings need to be interpreted with this aspect in mind. Further research might therefore incorporate a dynamic perspective to observe the changes that occur to our results as the number of ad impressions rises.

Also, we find that trust in the source of a personalized advertisement eliminates the prevailing targeting trade-off. This is an important contribution to theory and practice, but other important factors might be in play that were not investigated in this study. Thus, a worthwhile avenue for further research might be identifying and tackling these additional determinants.

References

Aaker, David A. and P.K. Brown (1972), "Evaluating Vehicle Source Effects," *Journal of Advertising Research*, 12 (4), 11–16.

Aiken, Leona S., Judith A. Stein, and Peter M. Bentler (1994), "Structural Equation Analyses of Clinical Subpopulation Differences and Comparative Treatment Outcomes: Characterizing the Daily Lives of Drug Addicts," *Journal of Consulting and Clinical Psychology*, 62 (3), 488–99.

Ansari, Asim and Carl F. Mela (2003), "E-Customization," *Journal of Marketing Research*, 60 (2), 131–45.

Assmus, Gert, John U. Farley and Donald R. Lehmann (1984), "How Advertising Affects Sales: Meta-Analysis of Econometric Results," *Journal of Marketing Research*, 21 (1), 65–74.

Bagozzi, Richard P. and Youjae Yi (1988), "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science*, 16 (1), 74–94.

———, ———, and Lynn W. Phillips (1991), "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly*, 36 (3), 421–58.

Bergkvist, Lars and John R. Rossiter (2007), "The Predictive Validity of Multiple-Item Versus Single-Item Measures of the Same Constructs," *Journal of Marketing Research*, 44 (3), 175–84.

Bleier, Alexander and Maik Eisenbeiss (2011), "Right Ad, Wrong Time? A Field Experiment on the Effects of Retargeting on Online Shopping Behavior," paper presented at the INFORMS Marketing Science Conference, Boston, June 7–9.

Braun, Michael and Wendy W. Moe (2012), "Online Advertising Response Models: Incorporating Multiple Creatives and Impression Histories," working paper, Massachusetts Institute of Technology.

Brehm, Jack W. (1966), *A Theory of Psychological Reactance*. New York: Academic Press.

——— (1989), "Psychological Reactance: Theory and Applications," *Advances in Consumer Research*, 16 (1), 72–75.

Brehm, Sharon S. and Jack W. Brehm (1981), *Psychological Reactance: A Theory of Freedom and Control*. New York: Academic Press.

Briggs, Rex and Nigel Hollis (1997), "Advertising on the Web: Is There Response before Click-Through?" *Journal of Advertising Research*, 37 (2), 33–45.

Bruner, Gordon C. II, Paul J. Hensel and Karen E. James (2005), *Marketing Scales Handbook – A Compilation of Multi-Item Measures for Consumer Behavior and Advertising*, Mason, OH: Thomson South-Western.

Bruner, Rick E. and Marissa Gluck (2006), "Best Practices for Optimizing Web Advertising Effectiveness," http://www.accountingweb.com/sites/default/files/best_practices_1.pdf. Retrieved 02/18/2013.

Bunker, Matthew P. and Darrell E. Bartholomew (2010), "A Multidimensional Framework of Web Browsers' Trust and Distrust of Banner Advertisements," *International Journal of Business Information Systems*, 5 (1), 19–33.

Chaiken, Shelly (1980), "Heuristic versus Systematic Information Processing and the Use of Source versus Message Cues in Persuasion," *Journal of Personality and Social Psychology*, 39 (5), 752–66.

——— (1987), "The Heuristic Model of Persuasion," in *Social Influence: The Ontario Symposium*, Vol. 4, Mark P. Zanna, E.T. Higgins, and C.P. Herman, eds. Hillsdale, NJ: Lawrence Erlbaum Associates.

———, Akiva Lieberman, and Alice H. Eagly (1989), "Heuristic and Systematic Information Processing Within and Beyond the Persuasion Context," in *Unintended Thought*, John A. Bargh, ed. New York: Guilford Press, 212–52.

——— and Durairaj Maheswaran (1994), "Heuristic Processing Can Bias Systematic Processing: Effects of Source Credibility, Argument Ambiguity, and Task Importance on Attribute Judgment," *Journal of Personality and Social Psychology*, 66 (3), 460–73.

Choi, Ben C.F., Zhenhui Jiang, and Eugene Yap (2012), "Information Sharing in Online Dyadic Exchange: A Relational Dialectic Perspective," in 45th Hawaii International Conference on System Sciences, 743–52.

Choi, Sejung M. and Nora J. Rifon (2002), "Antecedents and Consequences of Web Advertising Credibility: A Study of Consumer Response to Banner Ads," *Journal of Interactive Advertising*, 3 (1), 12–24.

Clee, Mona A. and Robert A. Wicklund (1980), "Consumer Behavior and Psychological Reactance," *Journal of Consumer Research*, 6 (4), 389–405.

Clifford, Stephanie (2010), "Instant Ads Set the Pace on the Web," *The New York Times*, http://www.nytimes.com/2010/03/12/business/media/12adco.html?_r=0. Retrieved 02/18/2013.

Dillard, James P. and Eugenia Peck (2000), "Affect and Persuasion: Emotional Responses to Public Service Announcements," *Communication Research*, 27, 461–95.

———, Courtney A. Plotnick, Linda C. Godbold, Vicki Freimuth, and Timothy Edgar (1996), "The Multiple Affective Outcomes of AIDS PSAs," *Communication Research*, 23, 44–72.

——— and Lijiang Shen (2005), "On the Nature of Reactance and its Role in Persusive Health Communication," *Communication Monographs*, 72 (2), 144–68.

Donovan, Robert J. and John R. Rossiter (1982), "Store Atmosphere: An Environmental Psychology Approach," *Journal of Retailing*, 58 (1), 34–57.

Drèze, Xavier and François-Xavier Hussherr (2003), "Internet Advertising: Is Anybody Watching?" *Journal of Interactive Marketing*, 17 (4), 8–23.

Eastlick, Mary Ann, Sherry L. Lotz, and Patricia Warrington (2006), "Understanding Online B-to-C Relationships: An Integrated Model of Privacy Concerns, Trust, and Commitment," *Journal of Business Research*, 59 (8), 877–86.

Edwards, Steven, Hairong Li, and Joo-Hyun Lee (2002), "Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-Up Ads," *Journal of Advertising*, 31 (3), 83–95.

eMarketer (2010), "How Should Marketers Address Concerns about Ad Targeting?" http://www.emarketer.com/Article/How-Should-Marketers-Address-Concerns-About-Ad-Targeting/1007514. Retrieved 02/18/2013.

Fisher, Robert J. and Laurette Dubé (2005), "Gender Differences in Responses to Emotional Advertising: A Social Desirability Perspective," *Journal of Consumer Research*, 31 (4), 850–58.

Fornell, Claus and David F. Larcker (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, 18, 39–50.

Fuchs, Douglas A. (1974), "Two Source Effects in Magazine Advertising," *Journal of Marketing Research*, 1 (3), 59–62.

Gefen, David (2000), "E-commerce: The Role of Familiarity and Trust," *Omega*, 28 (6), 725–37.

Henthorne, Tony L., Michael S. LaTour, and Rajan Nataraajan (1993), "Fear Appeals in Print Advertising: An Analysis of Arousal and Ad Response," *Journal of Advertising*, 22 (2), 59–69.

Hoffman, Donna L., Thomas P. Novak, and Marcos Peralta (1999), "Building Consumer Trust Online," *Communications of the ACM*, 42 (4), 80–85.

Hong, Sung-Mook and Salvatora Faedda (1996), "Refinement of the Hong Psychological Reactance Scale," *Educational and Psychological Measurement*, 56 (1), 173–82.

Jensen, Jakob D., Andy King, Nick Carcioppolo, and LaShara Davis (2012), "Why Are Tailored Messages More Effective? A Multiple Mediation Analysis of a Breast Cancer Screening Intervention," *Journal of Communication*, 62 (X), 851–68.

Jones, Karen (1996), "Trust as an Affective Attitude," *Ethics*, 107 (1), 4–25.

Jöreskog, Karl G. (1971), "Simultaneous Factor Analysis in Several Populations," *Psychometrika*, 36 (4), 409–26.

Kim, Dan J., Donald L. Ferrin, and H.R. Rao (2007), "A Trust-Based Consumer Decision-Making Model in Electronic Commerce: The Role of Trust, Perceived Risk, and Their Antecedents," *Decision Support Systems*, 44 (2), 544–64.

King, Nancy J. and Pernille W. Jessen (2010), "Profiling the Mobile Customer – Is Industry Self-Regulation Adequate to Protect Consumer Privacy when Behavioural Advertisers Target Mobile Phones? – Part II," *Computer Law & Security Review*, 26 (6), 595–612.

Koh, Yoon J. and S.S. Sundar (2010), "Heuristic Versus Systematic Processing of Specialist Versus Generalist Sources in Online Media," *Human Communication Research*, 36 (2), 103–24.

Korsgaard, M. Audrey and Loriann Roberson (1995), "Procedural Justice in Performance Evaluation: The Role of Instrumental and Non-Instrumental Voice in Performance-Appraisal Discussions," *Journal of Management*, 21 (4), 657–69.

Lambrecht, Anja and Catherine Tucker (2011), "When Does Retargeting Work? Information Specificity in Online Advertising," MSI Working Paper 11-105.

Lee, Jungwon, Jinwoo Kim, and Jae Y. Moon (2000), "What Makes Internet Users Visit Cyber Stores Again? Key Design Factors for Customer Loyalty," in *Proceedings of the Conference on Human Factors in Computing Systems CHI 2000*. New York: ACM, 305–12.

Lohr, Steve (April 30, 2010), "Privacy Concerns Limit Online Ads, Study Says," *The New York Times*.

Luo, Xueming (2002), "Trust Production and Privacy Concerns on the Internet: A Framework Based on Relationship Marketing and Social Exchange Theory," *Industrial Marketing Management*, 31 (2), 111–18.

Marketing Science Institute (2012), "2012–2014 Research Priorities," Marketing Science Institute.

McGinnies, Elliott and Charles D. Ward (1980), "Better Liked than Right: Trustworthiness and Expertise as Factors in Credibility," *Personality and Social Psychology Bulletin*, 6 (3), 467–72.

McStay, Andrew (2011), *The Mood of Information: a Critique of Online Behavioural Advertising*, New York: Continuum.

Mehrabian, Albert and James A. Russell (1974), *An Approach to Environmental Psychology*, Cambridge, MA: MIT Press.

Mitra, Anusree and John G. Lynch, Jr. (1995), "Toward a Reconciliation of Market Power and Information Theories of Advertising Effects on Price Elasticity," *Journal of Consumer Research*, 21 (4), 644–59.

Mossholder, Kevin W., Nathan Bennett, Edward R. Kemery, and Mark A. Wesolowski (1998), "Relationships Between Bases of Power and Work Reactions: The Mediational Role of Procedural Justice," *Journal of Management*, 24 (4), 533–52.

Nabi, Robin L. (1999), "A Cognitive-Functional Model for the Effects of Discrete Negative Emotions on Information Processing, Attitude Change, and Recall," *Communication Theory*, 9, 292–320.

O'Malley, Lisa, Maurice Patterson, and Martin Evans (1997), "Intimacy or Intrusion: The Privacy Dilemma for Relationship Marketing in Consumer Markets," *Journal of Marketing Management*, 13 (6), 541–60.

Pavlou, Paul A. (2003), "Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model," *International Journal of Electronic Commerce*, 7 (3), 101–34.

Perdue, Barbara C. and John O. Summers (1986), "Checking the Success of Manipulations in Marketing Experiments," *Journal of Marketing Research*, 23(4), 317–26.

Petty, Richard E. and John T. Cacioppo (1986), "The Elaboration Likelihood Model of Persuasion," in *Advances in Experimental and Social Psychology*, Vol. 19, Leonard Berkowitz, ed. New York: Academic Press, 123–62.

Podsakoff, Philip M., Scott B. MacKenzie, Jeong-Yeon Lee, and Nathan P. Podsakoff (2003), "Common Method Bias in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology*, 88 (5), 879–903.

Ponemon Institute (2010), "Economic Impact of Privacy on Online Behavioral Advertising," http://www.evidon.com/documents/OBA_paper.pdf. Retrieved 02/18/2013.

PricewaterhouseCoopers (2010), "Measuring the Effectiveness of Online Advertising," http://www.pwc.se/en_GX/gx/entertainment-media/pdf/IAB_SRI_Online_Advertising_Effectiveness_v3.pdf. Retrieved 02/18/2013.

Purcell, Kristen, Joanna Brenner, and Lee Rainie (2012), "Search Engine Use 2012," http://pewinternet.org/reports/2012/search-engine-use-2012.aspx.

Rousseau, Denise M., Sim B. Sitkin, Ronald S. Burt, and Colin Camerer (1998), "Not So Different After All: A Cross-Discipline View of Trust," *Academy of Management Review*, 23 (3), 393–404.

Salo, Jari and Heikki Karjaluoto (2007), "A Conceptual Model of Trust in the Online Environment," *Online Information Review*, 31 (5), 604–21.

Satorra, Albert and Peter M. Bentler (2001), "A Scaled Difference Chi-Square Test Statistic for Moment Structure Analysis," *Psychometrika*, 66 (4), 507–14.

Sheehan, Kim B. and Mariea G. Hoy (2000), "Dimensions of Privacy Concern among Online Consumers," *Journal of Public Policy & Marketing*, 19 (1), 62–73.

Simons, Herbert W., Nancy N. Berkowitz, and R. John Moyer (1970), "Similarity, Credibility and Attitude Change: A Review and a Theory," *Psychological Bulletin*, 73 (January), 1–16.

Steenkamp, Jan-Benedict E.M. and Hans Baumgartner (1998), "Assessing Measurement Invariance in Cross-National Consumer Research," *Journal of Consumer Research*, 25 (1), 78–90.

Stewart, Katherine J. (2003), "Trust Transfer on the World Wide Web," *Organization Science*, 14 (1), 5–17.

Taylor, David G., Donna F. Davis, and Ravi Jillapalli (2009), "Privacy Concern and Online Personalization: The Moderating Effect of Information Control and Compensation," *Business and Economics*, 9 (3), 203–23.

Tucker, Catherine E. (2012), "The Economics of Advertising and Privacy," *International Journal of Industrial Organization*, 30 (3), 326–329.

Turow, Joseph, Jennifer King, Chris J. Hoofnagle, Amy Bleakley, and Michael Hennessy (2009), "Americans Reject Tailored Advertising and Three Activities that Enable It," technical report, Annenberg School for Communication, University of Pennsylvania.

Urban, Glenn L., Cinda Amyx, and Antonio Lorenzon (2009), "Online Trust: State of the Art, New Frontiers, and Research Potential," *Journal of Interactive Marketing*, 23 (2), 179–90.

———, Fareena Sultan, and William J. Qualls (2000), "Placing Trust at the Center of Your Internet Strategy," *MIT Sloan Management Review*, 39–48.

Wang, Weiquan and Izak Benbasat (2005), "Trust in and Adoption of Online Recommendation Agents," *Journal of the Association for Information Systems*, 6 (3), 72–100.

White, Tiffany, Debra Zahay, Helge Thorbjornsen, and Sharon Shavitt (2008), "Getting too Personal: Reactance to Highly Personalized Email Solicitations," *Marketing Letters*, 19 (1), 39–50.

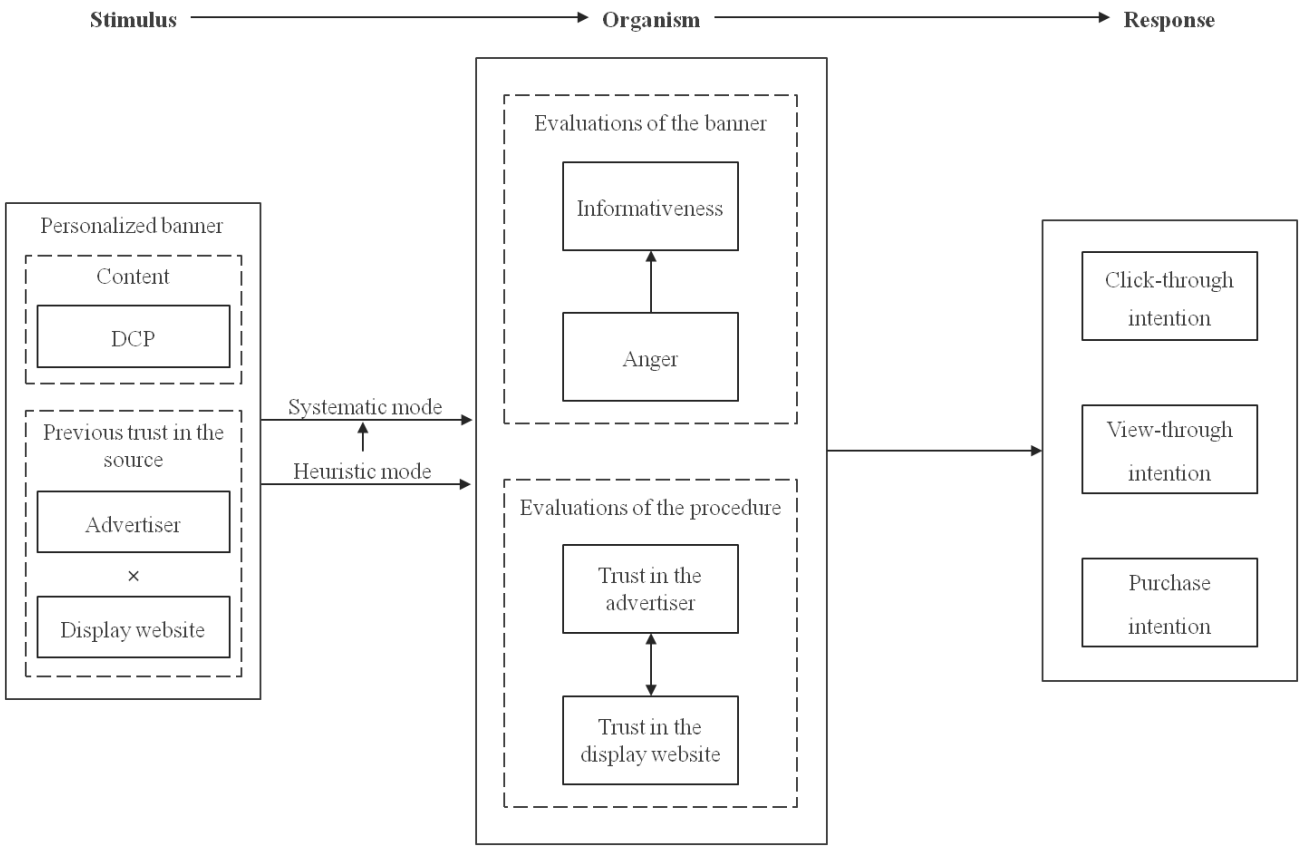
Woodside, Arch G. and J.W. Davenport Jr. (1974), "The Effect of Salesman Similarity and Expertise on Consumer Purchasing Behavior," *Journal of Marketing Research*, 11 (May), 198–202.

Yang, Shu-Chen, Wan-Chiao Hung, Kai Sung, and Cheng-Kiang Farn (2006), "Investigating Initial Trust Toward E-Tailers from the Elaboration Likelihood Model Perspective," *Psychology & Marketing*, 23 (5), 429–45.

Yaveroglu, Idil and Naveen Donthu (2008), "Advertising Repetition and Placement Issues in On-line Environments," *Journal of Advertising*, 37 (2), 31–43.

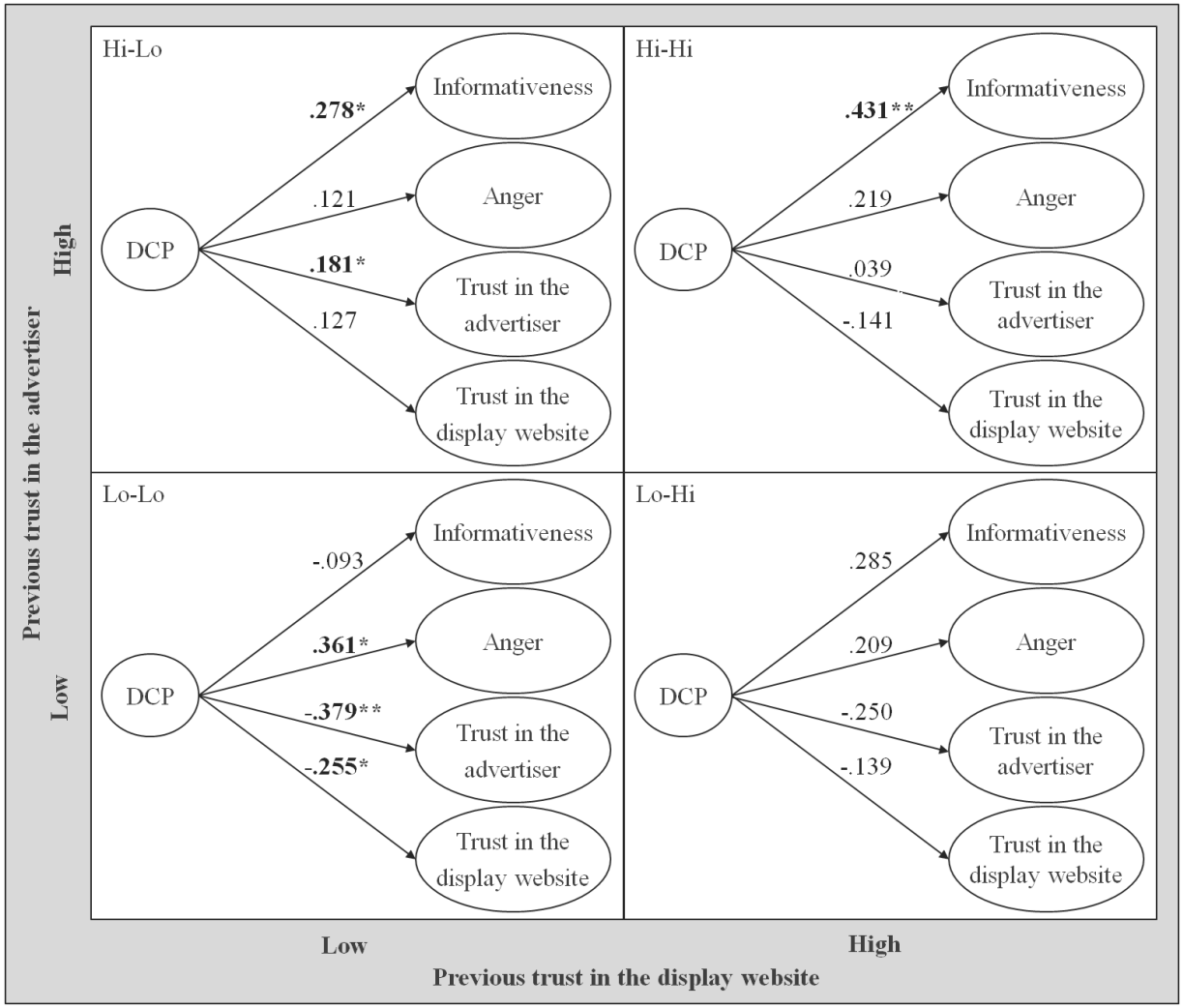
Yi, Youjae (1990), "The Effects of Contextual Priming in Print Advertisements," *Journal of Consumer Research*, 17 (2), 215–22.

Figure 1
Conceptual framework.



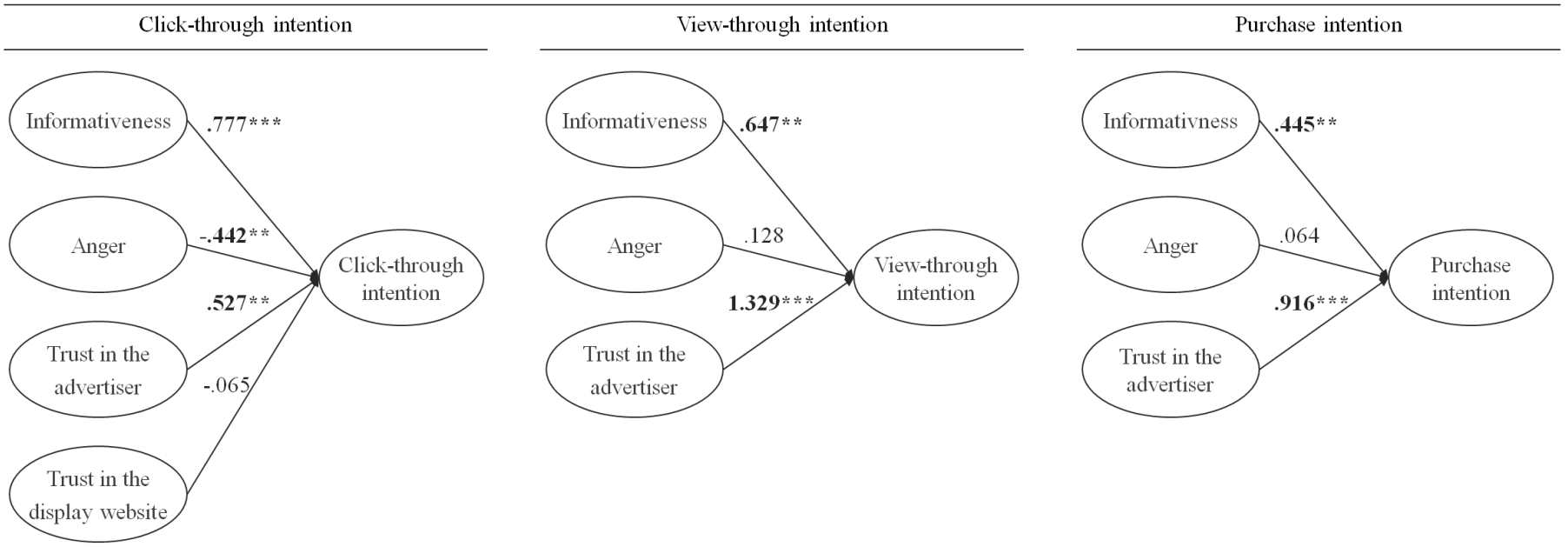
Note: DCP = Degree of content personalization; We allow *anger* to influence *informativeness*. In line with reactance theory, angry consumers may try to avoid the banner and refrain from further appreciation of its content (Edwards, Li and Lee 2002). Anger may thus directly decrease a banner's perceived informativeness. Also, Stewart (2003) shows that trust is transferred between related websites so that we allow for mutual influences between *trust in the advertiser* and *trust in the display website*.

Figure 2
Stimulus–organism part of the structural model.



Note: *$p < .1$; **$p < .05$; ***$p < .001$.

Figure 3
Organism–response part of the structural model.



Note: *$p < .1$; **$p < .05$; ***$p < .001$.

Table 1

Measurement model fit indices for multi-item constructs in analysis groups.

Construct/ item	Hi-Hi				Hi-Lo				Lo-Hi				Lo-Lo			
	SL	*t*-value	CR	AVE	SL	*t*-value	CR	AVE	SL	*t*-value	CR	AVE	SL	*t*-value	CR	AVE
Anger			.980	.658			.972	.609			.967	.592			.973	.637
An1	.624	8.480			.534	5.037			.460	3.884			.602	6.764		
An2	.682	11.341			.725	8.734			.731	10.556			.714	9.388		
An3	.976	32.129			.950	27.005			.973	20.243			.864	14.648		
An4	.909	22.430			.850	19.661			.822	12.229			.963	17.682		
Trust in advertiser			.950	.637			.924	.508			.958	.660			.979	.745
TA1	.646	4.450			.455	3.220			.686	6.741			.775	11.197		
TA2	.907	12.443			.752	7.149			.943	17.311			.892	24.017		
TA3	.819	10.511			.867	8.184			.787	8.079			.916	24.291		
Trust in display website			.972	.707			.974	.731			.978	.749			.955	.634
TDW1	.793	9.629			.676	7.427			.797	11.019			.785	8.053		
TDW2	.923	28.496			.972	24.798			.921	29.900			.813	10.711		
TDW3	.801	11.890			.889	19.993			.873	19.182			.791	8.564		

Note: SL = standardized factor loadings; CR = composite reliability; AVE = average variance extracted.

Table 2
AVE and squared correlations.

	Hi-Hi				Hi-Lo				Lo-Hi				Lo-Lo			
	Info	An	TA	TDW	Info	An	TA	TDW	Info	An	TA	TDW	Info	An	TA	TDW
Info	(1)				(1)				(1)				(1)			
Anger	.002	(.658)			.063	(.609)			.027	(.592)			.100	(.637)		
TA	.000	.009	(.637)		.001	.013	(.508)		.003	.002	(.660)		.114	.010	(.745)	
TDW	.017	.035	.317	(.707)	.074	.003	.000	(.731)	.080	.002	.056	(.749)	.111	.058	.252	(.634)

Note: Average variance extracted in brackets; Info = Informativeness; TA = Trust in the advertiser; TDW = Trust in the display website.

Table 3

Estimated coefficients of the structural model

Relationship	Path	(1) Hi-Hi Coeff	(1) Hi-Hi *t*-value	(1) Hi-Hi *p*	(2) Hi-Lo Coeff	(2) Hi-Lo *t*-value	(2) Hi-Lo *p*	(3) Lo-Hi Coeff	(3) Lo-Hi *t*-value	(3) Lo-Hi *p*	(4) Lo-Lo Coeff	(4) Lo-Lo *t*-value	(4) Lo-Lo *p*
Stimulus → Organism	DCP → Info	γ_{11} .431	2.899	.004	γ_{21} .278	1.840	.066	γ_{31} .285	1.536	.124	γ_{41} –.093	–.560	.575
	DCP → Anger	γ_{12} .219	1.453	.146	γ_{22} .121	.647	.517	γ_{32} .209	1.098	.272	γ_{42} .361	1.949	.051
	DCP → TA	γ_{13} .039	.275	.784	γ_{23} .181	1.704	.088	γ_{33} –.250	–1.484	.138	γ_{43} –.379	–2.123	.034
	DCP → TDW	γ_{14} –.141	–.929	.353	γ_{24} .127	.749	.454	γ_{34} –.139	–0.931	.352	γ_{44} –.255	–1.671	.095

Relationship	Path	(5) Banner evaluations Coeff	(5) Banner evaluations *t*-value	(5) Banner evaluations *p*	Path	(6) Procedure evaluations Coeff	(6) Procedure evaluations *t*-value	(6) Procedure evaluations *p*
Organism → Response	Info → CT	γ_{51} .777	4.077	.000	TA → CT	γ_{61} .527	2.324	.020
	Info → VT	γ_{52} .647	2.981	.003	TA → VT	γ_{62} 1.329	5.287	.000
	Info → PU	γ_{53} .445	2.139	.032	TA → PU	γ_{63} .916	3.696	.000
	Anger → CT	γ_{54} –.442	–2.788	.005	TDW → CT	γ_{64} –.065	–.302	.763
	Anger → VT	γ_{55} .128	.520	.603				
	Anger → PU	γ_{56} .064	.293	.770				

Model fit statistics: χ^2 = 536.111 (375 df), $p < .001$, CFI = 0.915, RMSEA = 0.075, SRMR = 0.132

Note: Coeff = Coefficient; TA = Trust in the advertiser; TDW = Trust in the display website; CT = Click-through intention; VT = view-through intention; PU = Purchase intention.