



# The Effect of Targeted Advertising on Users' Advertising Attitudes - Moderating Role Based on Product Involvement

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**Abstract.** With the rise of e-commerce, advertisement intelligent recommendation is gradually widely used, they provide users with personalized advertisement recommendation based on their platform behavior data, but there is a controversy about the boundary conditions of AI advertisement recommendation. In this paper, based on the stimulus-organism-response theory, we investigate how targeted ads affect users' attitudes toward ads. It is found that targeted ads further influence users' psychological resistance and attitudes toward ads by affecting perceived manipulation intent and perceived privacy violation. In addition, product involvement (high vs. low) moderates the relationship between targeted ads (targeted vs. non-targeted) and perceived manipulation intention and perceived privacy invasion, and the effects of targeted ads on perceived manipulation intention and perceived privacy invasion are mitigated when the products intelligently recommended by the ads are low-involvement products.

**Keywords:** AI; targeted advertising; perceived manipulative intent; perceived privacy invasion; psychological resistance; user attitudes.

## 1 Introduction

China's Internet advertising industry is characterized by innovation and intelligence, especially the application of artificial intelligence (AI) technology, which not only improves the accuracy and efficiency of advertising, but also promotes the development of advertising content creativity and personalization. Targeted advertising is a major factor in the growth of online advertising revenue. The 2023 China Internet Advertising Data Report shows that the advertising revenue of social platform advertising, however, has been declining. This paper focuses on how targeted advertising on social platforms affects users' perceived manipulation intentions, perceived privacy invasion to, psychological resistance and advertising attitudes.

Targeted advertising refers to advertisers delivering relevant advertisements to potentially interested audiences at the right time [1], and providing products and services that better meet their needs by analyzing user behavioral data. Thus, the use of targeted advertising increases the exposure of similar products or services desired by consumers,

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which are displayed through different mediums and in various forms[2]. Targeted advertising is highly customized to reduce the time and cost of user information search[3], to help users make purchase decisions, and to enhance the user's personalized experience. At the same time, it also creates a kind of "information cocoon" effect. Since the recommendation of targeted advertising needs to provide the user's personal preferences and other information, it often triggers the user's concern about privacy, which leads to psychological resistance[4].

Current research on targeted advertising focuses on the following three aspects: the strategic application of targeted advertising, the accuracy and benefits of targeted advertising, and the causal relationship between targeted advertising and user privacy. Although existing research has focused on consumer privacy concerns raised by targeted advertising, few scholars have identified advertising attitudes as an important factor influencing users' behavioral intentions in this scenario.

Therefore, this paper provides an in-depth theoretical and empirical analysis of the effects of targeted advertising and product involvement on users' perceived manipulative intent, perceived privacy invasion, psychological resistance, and attitudes toward advertising by applying theories such as psychological resistance and S-O-R in the process of providing users with personalized advertisement recommendations on social platforms, so as to provide decision-making and theoretical basis for how enterprises can scientifically carry out targeted advertisement placement on social platforms.

## **2 Theoretical Basis and Research Hypotheses**

### **2.1 SOR Theory**

Mehrabian and Russell (1974) [5] proposed the S-O-R theory, which explains the process by which an individual produces a behavioral response when stimulated by external environmental factors. In the theory, Stimulus refers to the stimulation of the external environmental factors of the organism; Organism refers to the transformation of the stimulus information into the internal endogenous or psychological perception of the organism after receiving the external stimulus; and Response represents the responsive behaviors of the organism in order to cope with the stimulation of the external environmental information received, which includes the psychological and behavioral dimensions. Based on the SOR theory, this study constructs a model for explaining how users' attitudes toward targeted advertisements are formed in the context of social platforms: after being exposed to targeted advertisements as an external stimulus on social platforms, users will have negative perceptions, and these perceptions will trigger users to develop psychological resistance, which will ultimately lead to the formation of attitudes toward advertisements. At the same time, we will also explore the moderating role of product involvement in advertising on the influence effect of targeted advertising. The specific research model is shown in Figure 1.

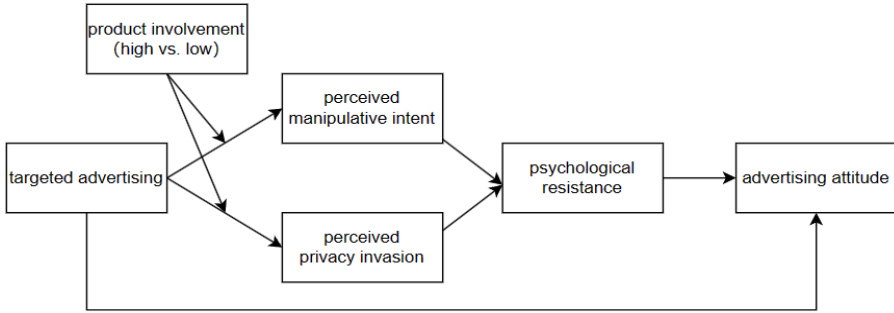


Fig. 1. Theoretical Model

## 2.2 Effects of Targeted Advertising on Advertising Attitudes

In the study of advertising exposure, the attitude of advertising exposure to advertising is inverted U-shape[6], the user's attitude towards advertising will become more positive with the increase of advertising exposure, but with the gradual familiarity with the content of the advertisement, the easier it is to produce negative attitudes such as boredom and disinterest. Therefore, to a certain extent, targeted advertising can provide convenience for users and improve advertising effectiveness. But beyond a certain range, targeted ads can bring negative emotions to consumers.

H1: Targeted advertising has a significant negative impact on advertising attitudes.

## 2.3 Effects of Targeted Advertising on Perceived Manipulation Intent and Perceived

When a platform intelligently pushes advertisements, consumers may perceive the platform's intention to manipulate and actively use their own persuasion skills[7], in order to try to avoid or resist the platform's manipulation of their behaviors, which may adversely affect the effectiveness of the promotion. Intelligent recommendation of targeted ads requires processing and analyzing users' personal behavioral data such as browsing and favorites, which may cause users to feel that their personal privacy has been violated.

H2a: Positive impact of targeted ads perceived manipulation intent

H2b: Targeted advertising positively affects perceived privacy invasion

## 2.4 Effects of Perceived Manipulative Intent and Perceived Privacy Violation on Users Psychological Resistance

When people feel that their freedom has been violated or threatened, they will generate an aversive motivation aimed at restoring their freedom, which is also known as psychological resistance[8]. Compared with non-targeted ads, targeted ads are more personalized by making intelligent recommendations based on users' behaviors on other e-commerce platforms, which is more likely to trigger users' suspicion of the purpose of

the ads' recommendations and generate stronger perceived manipulative intentions, thus triggering users' psychological resistance; it also causes users to worry about the problem of personal privacy leakage and generates their psychological resistance to the ads.

H3a: Perceived manipulation intention positively affects psychological resistance

H3b: Perceived privacy violation positively affects psychological resistance

## **2.5 Effects of Psychological Resistance on Users' Attitudes toward Advertising**

Psychological resistance drives individuals to take action in response to threats to their freedom and to assert their sovereignty[9]. Many current studies focus only on users' psychological resistance to targeted advertisements and lack further exploration of the subsequent effects. This study argues that after users develop psychological resistance to targeted advertisements in their circle of friends, they form corresponding attitudes to reconfirm their awareness, and such attitudes are influenced by psychological resistance.

H4: Psychological resistance negatively influences advertising attitudes.

## **2.6 Mediating Effects of Users' Perception and Psychological Resistance**

Based on the SOR theory, this study proposes a research model of targeted ads affecting users' attitudes. External stimuli (targeted ads) act on the organism, individuals perceive manipulation intention and privacy invasion, and then form a relatively stable psychological cognitive state after triggering psychological resistance; when the user produces psychological resistance, he or she will form an attitude toward the ads, that is, an individual response. In this paper, by analyzing the relationship between individual perception factors and psychological states, perceived manipulation intention, perceived privacy violation and psychological resistance are taken as chain mediators between the relationship between targeted advertisements and attitudes toward advertisements.

H5a: Perceived manipulation intention and psychological resistance mediate the relationship between targeted advertising and advertising attitude.

H5b: Perceived privacy invasion and psychological resistance mediated the relationship between targeted ads and advertising attitudes.

## **2.7 Moderating Effects of Product Involvement**

Product involvement is an important moderator of how consumers process information, and it generally depends on the value of the product. For low-involvement products, their prices are more affordable, their decision-making costs are relatively small, and their decision-making process is more emotional; the opposite is true for high-involvement products[10]. In this paper, we argue that when faced with targeted ads, high-involvement products are more likely to make users aware that the platform monitors

their browsing and favoriting behaviors, showing signs of manipulative intent and invasion of privacy.

H6a: Product Involvement Moderates the Relationship Between targeted ads and perceived manipulative intent; targeted ads have a greater impact on perceived manipulative intent in the high-involvement product condition compared to the low-involvement product condition.

H6b: Product involvement moderated the relationship between targeted ads and perceived privacy invasion, with targeted ads having a greater impact on perceived privacy invasion in the high-involvement product condition compared to the low-involvement product condition.

### 3 Empirical Studies

#### 3.1 Experimental Design

The study examines the effects of targeted advertisements on users' perceived manipulative intent and perceived privacy invasion in social platforms with a 2 (ad type: targeted vs. untargeted)  $\times$  2 (product involvement: high vs. low) experimental design for different product involvement. Taking WeChat as an example, a scenario was designed in which users saw advertisements while browsing their friend circles, and four virtual scenarios were designed with combinations of different product involvement levels and different states of advertisement types, as well as corresponding text descriptions. Respondents independently assessed their degree-based perceptions of perceived manipulative intent, perceived privacy invasion, psychological resistance, and advertising attitudes based on the randomly assigned scenarios.

Based on previous research, this paper takes into account the differences in consumers' familiarity with the products and their degree of specialization, and finally manipulates "laptop" as a high-involvement product and "candy" as a low-involvement product. There are four scenarios, each with 60 people, and 240 questionnaires were distributed through the Seeing Numbers questionnaire platform. 217 valid questionnaires were obtained after excluding the unselected questions and questionnaires with low data quality, and the validity rate of the questionnaires reached 90.4%. The statistical characteristics of the valid subjects are as follows: the proportion of females is relatively high (53.9%); the educational level is mainly concentrated in bachelor's degree and master's degree or above (84.8%); and the majority of subjects make more than 5 online purchases per month (71.9%).

In order to ensure the reliability and validity of the scales, this paper made appropriate modifications to the more mature scales in existing studies. Perceived manipulation intention (M) was measured according to the study of Yanping Wang and Yan Cheng[11] with three question items; Perceived privacy invasion (P) was measured according to the study of Fanjun et al[7] with three question items; Psychological Resistance Measurement (K) was set up with four question items with reference to the study of Yanping Wang and Yan Cheng[11] and Attitude toward advertising was set up with four question items with reference to the study of Whittler et al[12] Product

Involvement (I) was based on the study of [13] with laptop as a high involvement product and candy as a low involvement product. All scales were utilized on a 7-point Likert scale. Finally, we collected participants' familiarity with the product as well as their level of expertise as control variables using items assessed on a 7-point scale (1 = very low, 7 = very high).

## 3.2 Experimental Results

### 3.2.1 Reliability Testing

The reliability of the scale was assessed by Cronbach's alpha coefficient. The alpha coefficients of perceived manipulative intent (0.896), perceived privacy invasion (0.992), psychological resistance (0.883), and attitude toward advertising (0.923) all exceeded 0.8, indicating that the scales had high reliability and internal consistency. The scale was tested for structural validity, and the KMO value was 0.940 ( $p < 0.01$ ), making it suitable for factor analysis. The results of factor analysis showed that the variance contribution of the four variables reached 72.67%. In addition, the factor loadings were all greater than 0.5, indicating good convergent validity of the scale. The AVEs for perceived manipulative intent (0.740), perceived privacy invasion (0.842), psychological resistance (0.725), and attitude toward advertising (0.838) were all greater than 0.5, indicating that the scale had good discriminant validity.

### 3.2.2 Structural Modeling

This study used an independent samples t-test to verify the effects of targeted advertising on perceived manipulative intent, perceived privacy invasion, and advertising attitudes. As can be seen in Table 1, all were significantly different ( $p < 0.01$ ), and advertising attitudes in the context of non-targeted ads were significantly greater than those of targeted ads ( $M_{\text{non-targeted}} = 4.372 > M_{\text{targeted}} = 3.444$ ); and perceived manipulation intention and perceived privacy invasion were significantly greater in the context of targeted ads than non-targeted ads ( $M_{\text{targeted}} = 4.590 > M_{\text{non-targeted}} = 3.581$ ,  $M_{\text{targeted}} = 5.179 > M_{\text{non-targeted}} = 3.740$ ), therefore, hypotheses H1, H2a, and H2b are valid.

**Table 1.** Table of Group Statistics.

	Type	N	AVE	Standard deviation	Standard error of the mean	p
M	non- targeted	108	3.581	1.369	0.131	0.000
	targeted	109	4.590	1.521	0.146	0.000
P	non- targeted	108	3.740	1.494	0.143	0.000
	targeted	109	5.179	1.471	0.142	0.000
T	non- targeted	108	4.372	1.425	0.137	0.000
	targeted	109	3.444	1.414	0.136	0.000

Psychological resistance was analyzed through correlation analysis with psychological resistance as the dependent variable and perceived manipulation intention and per-

ceived privacy invasion as the independent variables. The results showed that both perceived manipulation intention ( $\beta=0.294$ ,  $p<0.05$ ) and perceived privacy invasion ( $\beta=0.564$ ,  $p<0.05$ ) had a significant positive effect on users' psychological resistance, and Hypothesis H3a and Hypothesis H3b were established. Psychological resistance ( $\beta=-0.62$ ,  $p<0.05$ ) had a significant negative effect on attitude towards advertising and hypothesis H4 was established.

### 3.2.3 Mediation Effects Test

The mediating effects were examined using Bootstrap and the results are shown in Table 2. As can be seen from Table 2, both perceived privacy invasion and perceived manipulation intention can mediate the relationship between targeted advertising and psychological resistance. And these two user perceptions, together with psychological resistance, act as continuous mediators between targeted ads and advertising attitudes, Hypothesis H5a and Hypothesis H5b hold.

**Table 2.** Result of the mediation effects test (N=217).

Trails	estimate valuation	Boost SE	Bootstrap		
			95% bias-corrected confidence interval		
			Lower limit	limit	p
A—M—K	0.601	0.149	0.314	0.902	0.000
A—P—K	0.960	0.160	0.650	1.284	0.000
A—M—K—T	-0.195	0.063	-0.327	-0.083	0.002
A—P—K—T	-0.372	0.101	-0.589	-0.189	0.002

### 3.2.4 Moderating Effects Test

The moderating effects proposed in this study were examined using the Process plug-in, and the specific results of the analyses are shown in Table 3. As can be seen in Table 3, in Model 1, there was a significant interaction between targeted advertising and product involvement on perceived manipulation intention ( $\beta=0.989$ ,  $p=0.011<0.05$ ); in Model 2, product involvement moderated the relationship between targeted advertising and perceived privacy invasion ( $\beta= 1.037$ ,  $p=0.009<0.05$ ). To characterize the moderating effect of product involvement on perceived privacy invasion and perceived manipulation intention, a simple effects analysis was conducted to distinguish the effect of targeted advertising on perceived privacy invasion and perceived manipulation intention in the low-involvement product and high-involvement product conditions. Compared to the low-involvement product, the effect of targeted ads on perceived manipulation intention was greater in the high-involvement product condition ( $M_{\text{high}} = 5.036 > M_{\text{low}} = 4.126$ ,  $p = 0.001$ ) and on perceived privacy invasion ( $M_{\text{high}} = 5.588 > M_{\text{low}} = 4.755$ ,  $p < 0.001$ ). Therefore, hypothesis H6a and hypothesis H6b are valid.

**Table 3.** Moderating effects test (N=217).

Form	Model1 (implicit variable: M)				Model2 (implicit variable: P)			
	$\beta$	se	t	p	$\beta$	se	t	p
Gender	0.096	0.192	0.502	0.616	-0.045	0.198	-0.229	0.819
Education	-0.045	0.147	-0.303	0.762	-0.022	0.152	-0.148	0.883
Attainment								
Product	-0.218	0.080	-2.742	0.007	-0.232	0.082	-2.838	0.005
Awareness								
A	0.387	0.280	1.386	0.167	0.784	0.288	2.726	0.007
I	0.094	0.270	0.349	0.727	-0.034	0.277	-0.123	0.903
A×I	0.989	0.385	2.570	0.011	1.037	0.396	2.621	0.009
Intercept	4.608	0.497	9.271	0.000	4.921	0.511	9.621	0.000
R2			0.026				0.024	
F			6.603				6.869	

## 4 Conclusions and Implications

### 4.1 Findings

The following conclusions were drawn from this study: (1) Targeted advertising positively affects perceived manipulation intention and perceived privacy invasion. (2) Perceived manipulation intention and perceived privacy invasion have a significant positive effect on psychological resistance. (3) Psychological resistance has a significant negative effect on attitude toward advertising. (4) Targeted advertising affects psychological resistance through perceived manipulation intention and perceived privacy violation, and further affects users' attitudes toward advertising. (5) Product involvement moderated the relationship between targeted ads and perceived manipulative intent and perceived privacy invasion.

### 4.2 Theoretical Contribution

The theoretical contributions of this study are (1) Through the theory of mental resistance, it proves that targeted advertising affects user perception and mental resistance, and further influences advertising attitudes, which enriches the relevant research on targeted advertising. (2) From the perspective of consumer behavior, it explores the problem of negative effects of targeted ads, which helps to objectively analyze and understand users' perceptions and reactions to targeted ads. (3) Exploring the different impacts of targeted advertisements on users' perceptions of high-involvement products and low-involvement products enriches the research on the boundaries of the impacts of targeted advertisements.



### 4.3 Practical Significance

The management implications of this study for the practice of targeted advertising on social platforms are as follows:(1) For the negative impact on users, the means of scientific intelligent recommendation should be applied timely and effectively to reduce the users' perceived manipulation intent and perceived privacy violation. (2) It helps the platform to rationally select recommended advertising products and improve advertising revenue. Continuously optimize and improve the recommendation system, and avoid the recommendation of high-involvement products as much as possible, or choose low-involvement products for recommendation when making targeted advertising recommendations.

### 4.4 Research Limitations

The limitations of this study are as follows:(1) Future research could expand the scope of the study beyond the social platform context and consider other scenarios for an in-depth exploration of users' psychological cognitive variables. (2) In addition to focusing on users' attitudes toward advertisements, future research could be expanded to examine other response outcomes such as users' attitudes toward platforms. (3) In addition to exploring the moderating role of product involvement, future research can further explore the interactive effects.

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