

# The Impact of Perceived Intrusion on Consumers' Purchase Intention in Short Video Product Placement Advertising

Yuya Liu, Shuwen Ye

School of Business, Guangdong University of Foreign Studies, Guangzhou, 510006, China

## ABSTRACT

This study focuses on short video embedded advertising, aiming to explore the mechanism of the impact of perceived intrusion on consumer purchase intention, and takes psychological resistance and personal involvement as mediating variables to construct a chain mediation model. The results indicate that perceived intrusion has a significant negative impact on purchase intention; Psychological resistance and personal involvement play a mediating role between perceived intrusion and purchase intention, and there is a chain mediation effect between the two. This study enriches the theory of conversion and purchase of short video embedded advertising, and provides strategic suggestions for brand short video advertising practice.

## KEYWORDS

Short video embedded advertising; Perceived intrusion; Purchase intention; Psychological resistance; Personal involvement degree

## 1. INTRODUCTION

Short video embedded advertising has become a crucial channel for users to access product information and make purchases. However, with the increase in the scale of various brand-embedded advertising placements, problems such as "stiff advertising placements", "poor quality of advertising content", and "reduced enjoyment of short videos" have emerged one after another. The intrusion of advertising placements on the audience's viewing of short videos has led to poor advertising effectiveness, and even reduced or damaged the image of the brand owner, disrupting the industry atmosphere. This study starts with the audience's experience when short video product placement ads appear, and explores in depth the mechanism by which perceived intrusion in short video product placement ads affects consumer purchase intention.

## 2. LITERATURE REVIEW

### 2.1. Product Placement

Product placement advertising involves strategically integrating products or brands into media content to achieve marketing goals, making it particularly suitable for environments where traditional advertising is considered intrusive (Balasubramanian, 2006). Mackay (2009) defines product placement as a form of advertising in which advertisements are inserted into program content in exchange for compensation or other conditions, based on traditional advertising contexts. Compared with traditional single advertising, product placement advertising has a higher acceptance rate and better advertising effect, as the audience unconsciously receives the advertising information.

## **2.2. Perceived Intrusion**

Li et al. (2002) first proposed the concept of perceived disturbance, which is a perceptual or psychological consequence that occurs when the cognitive process of the audience is interrupted. Rodgers et al. (2000) suggest that when cognitive processes are not smooth, users' sense of identification with behavior will greatly decrease, which can easily lead to "perceived harassment" . These negative attitudes can affect brand perception and attitude (MacKenzie et al., 1989) , and sometimes lead to advertising avoidance (Abernethy, 1991).

## **2.3. Psychological Resistance**

Brehm (1966) first proposed the concept of psychological resistance to explain people's psychological reactions when their freedom is threatened. He believed that psychological resistance refers to the motivational state exhibited when a person's freedom is deprived or threatened to be deprived. Ha (1996) used print advertising as the research object and pointed out that compulsive perception is the mandatory interference of advertising on consumers' browsing process. Edwards et al. (2002) stated that compulsive feelings are a result of users' psychological perception.

## **2.4. Personal Engagement Degree**

Zaichkowski et al. proposed in 1985 that involvement is defined as the cognitive and emotional state of an individual's involvement with a particular topic or object. Hsu et al. (2003) argue that involvement refers to the time and experience that consumers invest in the process of searching for relevant products and evaluating them. Celsi (1988) proposed that involvement is the core concept for understanding how consumers process information. Consumers with high involvement are more likely to engage in fine processing of information, resulting in better understanding and memory. The level of involvement determines the degree of cognitive resources allocated by consumers in the information processing process, and high involvement leads to more active information search and evaluation.

## **2.5. Purchase Intention**

McKnight et al. (2002) proposed that purchase intention reflects the level of readiness of consumers to purchase a product or service, and is influenced by trust and perceived risk. Purchase intention refers to the willingness of consumers to purchase products or services, which is influenced by trust and perceived risk (Gefen et al., 2003). Purchase intention refers to the likelihood that consumers will purchase a product or service in the future (Kim et al., 2008).

## **2.6. Emotional Transfer Theory**

Boush et al. (1987) applied the idea of emotional transfer to the evaluation process of consumer brand extension based on Stimulus Generalization and Assimilation, and established a conceptual framework for the emotional transfer process involved in brand extension. They proposed that consumers have a conditioned reflex towards the parent brand; that is, when the brand name appears, it will trigger positive emotions from consumers, which will then be transferred to the extended product. When consumers evaluate brand extensions, they infer the attributes and benefits of the extended product based on their understanding and emotions towards the core brand. This reflects the transmission of emotions between the brand and the extended product, similar to the mechanism of emotional transfer (Keller et al., 1992).

## **2.7. Cognitive Load Theory**

The cognitive load theory was proposed by Sweller in 1988, which suggests that human cognitive abilities are limited. The cognitive load theory revolves around the idea that human cognitive abilities, especially working memory, are limited (Sweller, 2020). Our working memory can only hold a small amount of information at a time. This limitation is crucial for understanding how learners process and retain new information (Sweller, 2023). The cognitive load theory explains that by reducing external load and increasing related load, the limited capacity of working memory can be optimized, thereby promoting schema construction and deep learning (Leppink et al., 2014).

## **3. RESEARCH HYPOTHESES AND RESEARCH MODELS**

### **3.1. Research Hypothesis**

#### **3.1.1. Perceived intrusion and purchase intention**

According to the theory of emotional transfer, emotions and attitudes will transfer between two related things; that is, the negative emotions and attitudes of consumers caused by perceived harassment will be transferred to the products promoted in advertisements. Li et al. (2002) argue that pop-up advertisements interrupt consumers' cognitive processes, and when consumers perceive their personal goals to be disrupted, they experience perceived intrusiveness. The perceived intrusiveness of advertisements may lead to a sense of stimulation, causing negative emotions in consumers (Tang et al., 2015), and ultimately avoiding the use of the products promoted by the advertisement whenever possible. When short video product placement interrupts consumers' immersive appreciation of short videos, their free behavior is restricted, resulting in perceived invasiveness (Li et al., 2017). Therefore, this article proposes the hypothesis H1:

H1. Perceived intrusion has a negative impact on purchase intention.

#### **3.1.2. Mediating role of psychological resistance**

Perceived intrusion can provide motivation for negative emotions, thereby increasing psychological resistance (van den Broeck et al., 2019). When freedom is threatened, users resist persuasive information by expressing negative emotions and cognition in order to restore their perceived autonomy. Persuasive information can trigger negative emotional reactions from consumers, such as anger and frustration, and lead to the rejection of information (Pappas et al., 2017). The message conveyed by short video product placement advertisements that persuade people to purchase their products will be rejected, leading to a decrease in purchase intention. Therefore, this article proposes hypothesis H2:

H2. Psychological resistance plays a mediating role between perceived aggression and purchase intention.

#### **3.1.3. The mediating role of personal involvement**

Stress, negative emotions, and uncertainty can compete for working memory resources through cognitive processes related to tasks, thereby increasing cognitive load, hindering learning, and reducing transfer (Moran, 2016). Personal involvement affects consumers' perception and processing of brand-related information, with consumers with higher levels of personal involvement being more sensitive to brand attributes and advertising information (Park, 1986). Silayoi et al. (2004) proposed that the level of personal involvement significantly affects purchasing decisions. In high involvement contexts, consumers are less affected by time pressure and are more focused on attributes related to themselves. Additionally, high involvement consumers are more likely to conduct detailed information searches and evaluations, ultimately enhancing their purchasing intentions. Therefore, this article proposes hypothesis H3:

H3. Personal involvement plays a mediating role between perceived intrusiveness and purchase intention.

### 3.1.4. Chain mediation effect of psychological resistance and personal involvement

Excessive control or restrictive persuasive information can trigger psychological resistance, increase resistance to information, and reduce personal involvement (Clayton, 2022). When individuals perceive that their freedom of choice is threatened, they will develop psychological resistance, leading to the emergence of defensive postures and increased resistance to related issues, reducing their willingness to participate in the problem (Brehm, 1966). Hooker et al. (1992) pointed out the impact of psychological resistance on individual involvement from a health perspective. Perceived health threats can lead to psychological resistance, especially when individuals feel their freedom is limited; this resistance can reduce their involvement in health-related behaviors. Therefore, this article proposes hypothesis H4:

H4. Psychological resistance and personal involvement have a chain-mediated effect between perceived intrusion and purchase intention.

## 3.2. Research Model

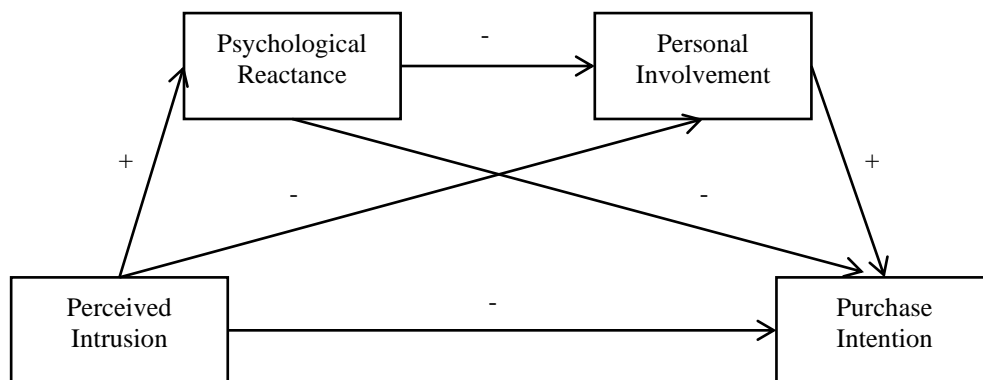


Figure 1. Theoretical Model of This Study

## 4. RESEARCH DESIGN

### 4.1. Questionnaire Design and Basic Content

This study mainly collected data through survey questionnaires and conducted subsequent research on the population who have watched short videos with embedded advertisements. The final survey questionnaire mainly consists of three parts. The first part is demographic characteristics, including gender, age, education, etc., which respondents fill in according to their personal situation; The second part mainly focuses on the basic information of the respondents about watching short videos and related questions. The third part mainly consists of 23 items measuring four variables: perceived intrusion, psychological resistance, personal engagement, and purchase intention.

### 4.2. Design of Variable Scale

This article studies the use of mature scales from foreign research for measurement. The scale for measuring perceived intrusion is adapted from the study by Li et al. (2002); The scale for measuring psychological resistance is adapted from Edwards' (2002) study; The scale for measuring personal involvement (cognitive involvement and emotional involvement) is adapted from Zaichkowski's (1994) study; The scale for measuring purchase intention is adapted from the research of Dodds (1991) and Gefen (2003). Based on the research of various scholars, the original scale items were translated

into Chinese and English, and contextualized and refined according to short video product placement advertisements. The measurement scales are designed using Likert 5-point scales, which are "strongly disagree", "disagree", "average", "agree", and "strongly agree", and are filled out by the subjects according to their situation.

### 4.3. Data Collection

This study used Wenjuanxing, a platform providing functions equivalent to Amazon Mechanical Turk, to design, distribute, and collect questionnaires. Finally, 244 questionnaires were obtained, and after excluding invalid questionnaires such as those with no viewing of short video embedded advertisements and incorrect answers to counterfeit questions, 211 questionnaires were obtained, with an effective response rate of 86.5%.

## 5. DATA ANALYSIS

### 5.1. Descriptive Statistics

Among the valid samples collected, males accounted for 44.5% and females accounted for 55.5%. The sample age was concentrated between 18 and 34 years old, which is more in line with the age distribution of users on short video platforms; The disposable income level of the sample is relatively average, mainly concentrated between 2028 yuan and 8234 yuan; 68.7% of the samples browse short videos for more than 4 hours per day; The total frequency of selecting 9 types of short videos with embedded advertisements is 860 times, indicating that the average number of short video types with embedded advertisements watched by all samples is 4.1. This indicates that the sample generally has a deeper exposure to short videos, and the questionnaire data can basically reflect the real situation of browsing embedded advertisements in short videos.

### 5.2. Reliability and Validity Testing

Data analysis shows that Cronbach's alpha coefficients all exceed the acceptable standard of 0.7, indicating that the scale has good reliability. The overall questionnaire passed KMO measurement test and Barlett sphericity test. The KMO value is 0.943, the p-value of Barlett's sphericity test is 0.000, and the factor loadings of most measurement items are above 0.7. The AVE is greater than 0.5, and the CR is greater than 0.7, indicating good convergent validity.

**Table 1.** Convergent Validity Indices

Item	AVE	CR
Perceived Intrusion	0.674	0.935
Psychological Reactance	0.666	0.888
Personal Involvement	0.578	0.925
Purchase Intention	0.617	0.828

The square root values of AVE in each dimension are greater than the maximum absolute value of the correlation coefficient between factors, and the HTMT values are all less than 0.85, indicating good discriminability between factors and good discriminant validity.

**Table 2.** Variable Correlations and Square Roots of AVE (Discriminant Validity)

	Perceived Intrusion	Psychological Reactance	Personal Involvement	Purchase Intention
Perceived Intrusion	<b>0.821</b>			
Psychological Reactance	0.615	<b>0.816</b>		
Personal Involvement	-0.436	-0.490	<b>0.761</b>	
Purchase Intention	-0.544	-0.534	0.546	<b>0.785</b>

Note: The bold values on the diagonal represent the square root of AVE, and the lower triangle represents the latent variable correlation coefficient.

### 5.3. Regression Analysis

This study used Pearson correlation coefficient analysis to analyze the relationship between variables, and the results showed that there was a significant correlation between all variables. Then perform linear regression analysis using SPSS 25.0. The conditional indices of the three independent variables are all less than 30, the VIFs are all less than 5, and the tolerances are all greater than 0.3. There is no collinearity among the variables, and regression analysis can be conducted.

**Table 3.** Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficient	t	Significance	Collinearity Statistics		
	B	Std. Error	Beta			Condition Index	Tolerance	VIF
(Constant)	3.452	0.365		9.46	0.000**			
Perceived Intrusion	-0.242	0.059	-0.276	-4.091	0.000**	1	0.598	1.673
Psychological Reactance	-0.18	0.061	-0.205	-2.939	0.004**	4.116	0.561	1.782
Personal Involvement	0.365	0.069	0.325	5.326	0.000**	7.482	0.731	1.368
R <sup>2</sup>						0.437		
Adjusted R <sup>2</sup>						0.428		
F						53.476		
P						0.000**		
Dependent Variable: Purchase Intention								

Note: \* \* At the 0.01 level (double tailed), the correlation is significant.

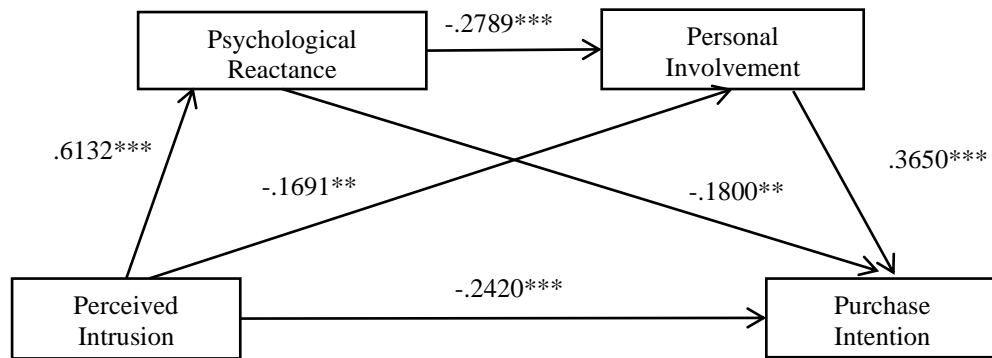
The fitting degree of this linear regression model is good,  $R^2=0.437$ . Perceived intrusion has a significant negative impact on purchase intention ( $\beta=-0.242<0$ ,  $P<0.01$ ); Psychological resistance significantly negatively affects purchase intention ( $\beta=-0.18<0$ ,  $P<0.01$ ); Personal involvement significantly positively affects purchase intention ( $\beta=0.365>0$ ,  $P<0.01$ ). Finally, the following regression equation is derived between the variables:

Purchase intention =  $3.452 - 0.242 * \text{perceived intrusion} - 0.18 * \text{psychological resistance} + 0.365 * \text{personal involvement level}$

### 5.4. Chain Mediation Effect Test of Psychological Resistance and Personal Involvement Between Perceived Intrusion and Purchase Intention

This article uses Model 4 in the SPSS macro program Process written by Hayes to test the independent mediating effect of psychological resistance. This program is based on the Bootstrap method to verify

the general mediating effect and the multiple chain mediating effect, and has been widely recognized and used by scholars.



**Figure 2.** Path Coefficient Diagram of Perceived Intrusion, Psychological Resistance, Personal Involvement and Purchase Intention

**Table 4.** Mediating Effect of Perceived Intrusion, Psychological Resistance, Personal Involvement and Purchase Intention

Model Path	Effect	BootSE	BootLLCI	BootULCI	Test Result
Total Effect: X→Y	-.4765	.0509	-.5768	-.3762	Significant
Direct Effect: X→Y	.0509	.0591	-.3585	-.1254	Significant
Total Indirect Effect	-.2345	.0502	-.3335	-.1391	Significant
Path 1: X→M1→Y	-.1104	.0447	-.1988	-.0228	Significant
Path 2: X→M2→Y	-.0617	.0253	-.1174	-.0181	Significant
Path 3: X→M1→M2→Y	-.0624	.0226	-.1124	-.0245	Significant

Note: X represents perceived intrusion, M1 represents psychological resistance, M2 represents personal involvement, and Y represents purchase intention; → represents the path side

It can be seen that the total effect confidence interval of perceived harassment on purchase intention is [-. 3585, -. 1254], excluding 0, with an effect value of -. 4765, indicating that perceived harassment has a significant impact on purchase intention. Hypothesis H1 is valid.

When the mediating variables, psychological resistance and personal involvement, enter, the confidence interval for the direct effect is [-. 3585, -. 1254], excluding 0, indicating that perceived intrusion has a significant direct effect on purchase intention. The overall indirect effect is -. 2345, with a confidence interval of [-. 3335, -. 1391], which does not include 0, indicating a significant indirect effect and the presence of a mediating effect.

There are three indirect effects (mediating effects) in total, and the specific mechanism is as follows: the effect value of perceived harassment on purchase intention based on the mediating variable psychological resistance (path 1) is -1104, with a confidence interval of [-. 1988, -. 0228], which does not include 0, indicating that the mediating effect of psychological resistance is significant. Hypothesis H2 is supported;

The effect value of the mediating effect of perceived intrusion on purchase intention through personal involvement (path 2) is -0.0617, with a confidence interval of [-. 1174, -. 081], which does not include 0, indicating that the mediating effect of personal involvement is significant. Hypothesis H3 is supported;

In addition, there is also a remote mediator, that is, perceived intrusion affects purchase intention through a chain mediation effect of psychological resistance and personal involvement (path 3), with

an effect value of -0.0624 and a confidence interval of [-1.124, -0.245], which does not include 0, indicating a significant chain mediation effect. Hypothesis H4 is supported.

## **6. DISCUSSION**

### **6.1. Theoretical Contributions**

This study confirms that perceived intrusion has a significant negative impact on consumer purchase intention in short video embedded advertising scenarios, and psychological resistance and personal involvement play important mediating and chain mediating roles in this impact process. This conclusion provides a theoretical basis for a deeper understanding of the effectiveness mechanism of short video product placement advertising.

### **6.2. Application Implications**

When placing embedded advertisements in short videos, brand owners should pay attention to consumers' psychological feelings, optimize advertising content and implantation methods, and reduce perceived interference. At the same time, in the creation and placement of advertisements, we fully respect consumers' demand for freedom, and use valuable and interesting content, such as storytelling advertisements, to enhance consumers' interest and identification with the product, increase personal engagement, reduce psychological resistance, and promote an increase in purchase intention.

Advertising practitioners need to innovate their advertising creativity and content, abandon the forced sales model, and focus on fun, informative, and interactive aspects. When planning short video content and advertising placement methods, clever creativity and copywriting are used to guide consumers to generate positive emotions, reduce perceived harassment, and promote an increase in purchase intention.

Short video platforms should strengthen advertising review and management, and provide precise push services. At the same time, with the help of big data analysis to achieve precise push, matching ads are pushed based on user characteristics, improving the fit between ads and users, reducing perceived intrusion, and increasing ad conversion rates.

### **6.3. Research Limitations and Prospects**

This study only collected data through a questionnaire survey, and the data source is relatively single, which may result in sample bias. Not considering other possible influencing factors, such as consumer personality traits, advertising time and frequency, etc.

Future research can use various methods to collect data, such as experimental methods, interview methods, etc., to enhance the reliability and effectiveness of research results. Comparing the advertising effects of different types of short video platforms or cultural backgrounds can expand the breadth and depth of research.

## **REFERENCES**

- [1] Abernethy A M. Television Exposure: Programs vs. Advertising [J]. *Journal of Current Issues and Research in Advertising*, 1991, 13: 61-77.
- [2] Balasubramanian, S. K., Karrh, J. A., & Patwardhan, H. (2006). Audience Response To Product Placements: An Integrative Framework and Future Research Agenda. *Journal of Advertising*, 35(2), 13-30.
- [3] Boush D M, Shipp S, Loken B, et al. Affect generalization to similar and dissimilar brand extensions. *Psychology and Marketing*, 1987, 4(3), 25-37.
- [4] Brehm J W. *A Theory of Psychological Reactance*[M]. Oxford, England: Academic Press, 1966: 135.

- [5] Celsi R L, Olson J C. The Role of Involvement in Attention and Comprehension Processes [J]. *Journal of Consumer Research*, 1988, 15(2): 210-224.
- [6] Clayton R. The Impact of Persuasive Messaging on Psychological Reactance and Behavioral Intentions [J]. *Journal of Health Communication*, 2022, 27(4): 450-465.
- [7] Dodds W B, Monroe K B, Grewal D. Effect of Price, Brand and Store Information on Buyers` Products Evaluations [J]. *Journal of Marketing Research*, 1991, 28(3): 307-319.
- [8] Edwards S M, Li H, Lee J H. Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads [J]. *Journal of Advertising*, 2002, 31(3): 83-95.
- [9] Gefen D, Straub D. Managing user trust in B2C e-services [J]. *E-Service Journal*, 2003, 2(2): 7-24.
- [10] Ha L. Advertising clutter in consumer magazines: Dimensions and effects [J]. *Journal of Advertising Research*, 1996, 36(1): 76-84.
- [11] Hooker K. Possible Selves and Perceived Health in Older Adults and College Students [J]. *Journal of Aging and Health*, 1992, 4(2): 157-172.
- [12] Hsu C. L., Lee M. K. Involvement: A Major Determinant in the Amount of Decision-Making Effort Devoted to the Product Evaluation Process [J]. *Journal of Interactive Advertising*, 2003, 3(2): 44-56.
- [13] Keller K L, Aaker D A. The Effects of Sequential Introduction of Brand Extensions [J]. *Journal of Marketing Research*, 1992, 29(1): 35-50.
- [14] Kim D J, Ferrin D L, Rao H R. A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents [J]. *Decision Support Systems*, 2008, 44(2): 544-564.
- [15] Leppink J, Paas F, Van Gog T, et al. Effects of Pairs of Problems and Examples on Task Performance and Different Types of Cognitive Load [J]. *Learning and Instruction*, 2014, 30(4): 32-42.
- [16] Li H, Edwards S M, Lee J H. Measuring the Intrusiveness of Advertisements: Scale Development and Validation [J]. *Journal of Advertising*, 2002, 31(2): 37-47. DOI:10.1080/00913367.2002.10673665.
- [17] Li H, Luo X R, Zhang J, et al. Resolving the privacy paradox: toward a cognitive appraisal and emotion approach to online privacy behaviors [J]. *Information & Management*, 2017, 54(8): 1012-1022.
- [18] Mackay T, Ewing M, Newton F, et al. The effect of product placement in computer games on brand attitude and recall [J]. *International Journal of Advertising*, 2009, 28: 423-438.
- [19] MacKenzie S B, Lutz R J. An Empirical Examination of the Structural Antecedents of Attitude Toward the Ad in an Advertising Pretesting Context [J]. *Journal of Marketing*, 1989, 53: 48-65.
- [20] McKnight D H, Choudhury V, Kacmar C. Developing and validating trust measures for e-commerce: An integrative typology [J]. *Information Systems Research*, 2002, 13(3): 334-359.
- [21] Moran T P. Anxiety and working memory capacity: a meta - analysis and narrative review [J]. *Psychological Bulletin*, 2016, 142: 831-864.
- [22] Pappas I O, Kourouthanassis P E, Giannakos M N, et al. Sense and sensibility in personalized e-commerce: how emotions rebalance the purchase intentions of persuaded customers [J]. *Psychology & Marketing*, 2017, 34(10): 972-986.
- [23] Park C W, Jaworski B J, MacInnis D J. Strategic Brand Concept - Image Management [J]. *Journal of Marketing*, 1986, 50(4): 135-145.
- [24] Rodgers J, Thorson E. The interactive advertising model: How users perceive and process online ads [J]. *Journal of Interactive Advertising*, 2000, 1(1): 41-60.
- [25] Silayoi P, Speece M. Packaging and purchase decisions: An exploratory study on the impact of involvement level and time pressure [J]. *British Food Journal*, 2004, 106(8): 607-628.
- [26] Sweller J. Cognitive Load During Problem Solving: Effects on Learning [J]. *Cognitive Science*, 1988, 12(2): 257-285.
- [27] Sweller J. Cognitive Load Theory and Educational Technology [J]. *Educational Technology Research and Development*, 2020, 68(1): 1-16.
- [28] Sweller J. Cognitive Load Theory [M]. Tierney R J, Rizvi F R, Ercikan K, eds. *International Encyclopaedia of Education*. 4th ed. Elsevier, 2023: 127-134.
- [29] Tang J, Zhang P, Wu P F. Categorizing consumer behavioral responses and artifact design features: the case of online advertising [J]. *Information Systems Frontiers*, 2015, 17(3): 513-532.
- [30] van den Broeck E, Zarouali B, Poels K. Chatbot advertising effectiveness: when does the message get through? [J]. *Computers in Human Behavior*, 2019, 98: 150-157.
- [31] Zaichkowsky J L. Measuring the involvement construct [J]. *Journal of Consumer Research*, 1985, 12: 341-352.
- [32] Zaichkowsky J L. The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising [J]. *Journal of Advertising*, 1994, 23(4): 59-70.