

# A Comparative Study on the Effect of Information of Virtual Advertisements in Dramas and Entertainment on Advertisement: Focusing on the Mediating Effect of Perceived Intrusion

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## Abstract

Recently, virtual advertisements have been allowed to be exposed to broadcast programs. This study aims to empirically investigate whether the influence of the information of virtual advertisements on the advertisement effect by mediating the perceived intrusion differs according to the type of broadcasting program (entertainment / drama). To this end, an experimental stimulus was produced in which virtual advertisements were placed in entertainment and drama broadcasting programs. The subjects for the experimental study Change to consist of male and female college students in their twenties. The research results are as follows. It was confirmed that the information of virtual advertisements exposed to entertainment among broadcast programs had a negative effect on advertisement attitude and brand attitude by partially mediating perceived intrusion. However, it was confirmed that the information of the virtual advertisement exposed to the drama among the broadcast programs did not show the mediating effect of the perceived intrusion to the advertisement attitude and brand attitude. The above research results have the academic significance Use only that empirically verified the influence of the information of virtual advertisements on the advertisement attitude and brand attitude by mediating the perceived intrusion different according to the type of broadcasting program. In addition, the strategy for exposure of virtual advertisements according to the type of broadcast program is expected to be useful data in the global advertising media strategy.

**Keywords:** Virtual Advertisement, Advertisement Information, Perceived Intrusion, Advertisement Attitude, Brand Attitude

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## 1. Introduction

Many consumers think that advertising is a hindrance to content acceptance. overcome this, advertisers are striving to form advertisement attitudes favorably by enhancing the attention and favorability of consumers [1]. One of these efforts is a virtual advertisement that can be exposed within a range that does not interfere with the flow of broadcast content. Virtual advertisements, which had been allowed only for sports broadcast programs, were also allowed to expand exposure to dramas, entertainment shows, and sports reports among terrestrial TV programs in 2015. Expanding the exposure of virtual advertisements to terrestrial TV programs was a way to secure financial resources for the broadcasting industry and revitalize the stagnant advertisement market.

Virtual advertisement is a form in which a virtual image is inserted and exposed in a broadcast program using computer graphic technology [2]. It complements the shortcomings of existing TV advertisements and is exposed within a range that does not interfere with the flow of broadcast programs. Virtual advertisements can be placed in various places such as the right, left, and bottom of the contents in the broadcast program, and it can be exposed to the prologue, epilogue, and rating notice from which the broadcast program starts. The types of virtual advertisements are classified according to technological development, and virtual advertisements are exposed in various forms, such as props, subtitles, and video types [3], so they are effective in providing attractions [4].

The deregulation and expansion of virtual advertisements increased the interest of advertising industry workers and advertisers. It provides an opportunity to inform advertisers' products or brand information; it is attracting attention as a marketing communication tool that can build brand awareness [5].

The efficiency and effectiveness of allowing virtual advertisements are being studied by many scholars. The effectiveness of virtual advertisements is to overcome the zapping phenomenon and advertisement congestion that were troubled by existing advertisements [6], [7], as virtual advertisements can be arranged as part of a broadcast program. Among the advertisement attributes, it was also argued that virtual advertisements are more effective than general advertisements in terms of fun and advertisement effects [8]. A study that confirmed consumer attitudes about virtual advertisements according to the genre of broadcasting programs was also presented. Shin [9] suggested that the information, relevance, and entertainment of virtual advertisements exposed to entertainment programs had a positive effect on consumer attitudes, but negative effects on annoyance. In the drama programs, it was suggested that the relevance of entertainment and the virtual advertisement had a positive effect on consumer attitude. In addition, the information of virtual advertisements did not affect consumer attitudes, but negatively affected annoyance [9]. A study by Shin and Hwang [10] also suggested the results of a study that negative emotions such as annoyance and irritation that occur in virtual advertisements reduce the advertising effect. As such, studies are being conducted that suggest positive and negative aspects of virtual advertisement. The annoyance and irritation of virtual advertisements are caused by the perceived intrusion of advertisements. Consumers were exposed to accept information in broadcast programs, but the perceived intrusion of advertisements forms negative attitudes of advertisements and leads to a decrease in advertisement effectiveness [11].

Advertising exposure provides consumers with necessary information for products and brands. Provision of information in advertisement is one of the pure functions of advertisement, which reduces product information search time by providing desired information to consumers [12] and has a positive effect on advertisement attitude [13] [14]. The visual exposure of the virtual advertisement provides consumers with useful advertisement information by being exposed to the broadcast program; however, it can be considered a perceived intrusion that interferes with the content to the broadcast program audience [1].

As discussed above, virtual advertisements can be exposed to various broadcast programs. However, it has a limitation that it should not interfere with the flow of broadcast programs. Virtual advertisement is also exposed in trailers organized to raise curiosity and expectations for the next program after the broadcast program is over by utilizing these characteristics. The information of virtual advertisements exposed in program trailers can cause perceived intrusion in consumers who accept their broadcast programs, which can negatively affect the attitude of advertisements. Based on this, this study attempts to verify whether advertisement attitudes can be changed by mediating perceived intrusion according to broadcasting programs that can expose virtual advertisements.

It also aims to provide a wide range of understanding of virtual advertisement effectiveness and the implications for virtual advertisement execution strategies by confirming whether there is a difference in the advertisement effect that appears through the mediating of perceived intrusion according to the broadcast program [1].

## 2. Research Hypotheses and Research Model

### 2.1. Research Hypotheses

Delivery of product information presented in advertisements can be said to be the fundamental attribute and purpose of advertisements. Therefore, advertising information is being evaluated as an effective promotion tool for consumers' active and efficient purchase. One of the reasons consumers see advertisements is that they can obtain useful information about a product or brand. In addition, advertisement information is evaluated as an effective promotion tool for consumers' active and efficient purchases [15].

The information of advertisement means the degree to which consumers are satisfied by providing them with objective product information or the latest information [16]. Among the functions of advertisement, Park [17] explained that the information provision function evaluates advertisement favorably above all. This means that the information value of advertisements is closely related to consumers' advertisement perception and advertisement attitude [18]. Research on the value and usefulness of advertisement information has already been verified by a number of researchers [19] - [21].

Min and Song [19] examined the effect of advertisement information perception on advertisement attitude and advertisement avoidance for consumers who regularly receive department store DM advertisements. First, for the study, the advertisement information was evaluated as the satisfaction that department store MD advertisements inform consumers of objective and timely latest information in abundance. As a result of the study, it was confirmed that the higher the awareness of advertisement information, the higher the advertisement attitude. It also explained that the higher the informational awareness of advertisements, the less advertisement avoidance [19].

An and Kim [22], through mobile commerce research, explained that providing diverse and discriminatory information stimulates consumers' purchase, and that prompt and reliable information has a favorable effect on the formation of brand trust. Kim and Lee [23] confirmed that the information value and entertainment value of advertisement perceived in mobile advertisement have a positive effect on advertisement attitude. In addition, the higher the tendency of consumers to prefer advertisement images, the higher they perceive the information value and entertainment value of mobile advertisements. In the study of Yoon and Cho [24], the influence of product information on consumer attitudes in mobile advertising situations was also confirmed. In mobile advertisement, it was suggested that product attitude was more favorable when specific product information was presented than when advertisement was exposed without product information. Therefore, they explained that the purchase probability also varies depending on how product information is provided in mobile advertisements.

A number of prior studies on advertising information have demonstrated that the information of advertisement has a positive effect on the attitude of advertising and product. However, advertisement exposure is made by passive selection rather than active selection by most consumers. Therefore, advertisements have two sides: the positive aspect of providing information and the negative aspect of hindering the acceptance of content.

The recent media diversification and multi-channel era are being utilized as a new opportunity to expose advertisements to advertisers. However, consumers feel congested and annoyed by the wide range of advertisement exposures, and are accepting it as an obstacle to content acceptance. In other words, the negative effect of advertisement attitudes arising from perceived intrusion of advertisement leads to

rejection of specific advertisement or dislike of advertisement itself, which negatively affects advertisement attitudes [25-29].

Perceived invasiveness is a concept that causes cognitive information processing, content use disruption, or advertisement clutter arising from advertisement exposure in the process of consumer accepting media content [30]. When an advertisement is forcibly exposed regardless of the content audience's will, they perceive the advertisement as an intrusion. Such ad intrusion eventually affects the negative behavior of ad avoidance and annoyance. If the advertisement is exposed in a compulsory manner regardless of the user's intention, the user perceives the advertisement as intrusive, and as a result, this affects the annoyance and avoidance behavior of the advertisement [30].

The study on perceived intrusion consisted of research on advertisement factors, emotions of content audiences, media attitudes, and advertisement effect on advertisement attitudes. Cho and Jang [31] conducted a study on sports program viewers to determine the effect of perceived intrusion of advertisements exposed while watching TV on advertisement attitude and advertisement avoidance. As a result of the study, it was explained that the perceived intrusion of advertisements exposed while watching sports has a negative effect on advertisement attitude. It was also explained that the higher the perceived intrusion of the advertisement, the higher the cognitive and physical avoidance of the advertisement. These results explained that when consumers feel that TV advertisements are perceived intrusion, the perceived intrusion of advertisements has a negative effect on advertisement attitude and advertisement avoidance phenomenon occurs.

In the study of Choi and Do [11], when they perceive internet advertisements as information, consumers perceive advertisement as intrusive, and this perceived intrusion negatively affects the advertisement attitudes. Lee [27] stated that the perceived intrusion of Internet pop-up advertisements is more negative in advertisements than in advertisements with low perceived intrusion. In a study by Park [32], the information of mobile video advertisements mediates perceived intrusion and negatively affects advertisement attitude. However, Goodrich, Schiller and Galletta [29] argued that information of online advertisements reduces perceived intrusion, but advertisements with high perceived invasiveness have a negative effect on advertisement attitudes and media attitudes.

By summarizing the preceding studies above, there is a correlation between information, perceived intrusion, and attitude toward advertisement. In the related research, there have been studies on advertising effects exposed through various media, but studies on the relationship between information, perceived intrusion, and advertisement attitude about virtual advertisements have not been conducted yet.

Therefore, in this study, we intend to proceed based on the preceding studies that the information of advertisements made in the preceding studies directly or indirectly influences the advertisement attitude by mediating the perceived intrusion. The following hypotheses were established to check whether there is a difference in the mediating effect of perceived intrusion that influences the advertisement attitude and brand attitude according to the entertainment and drama in which the virtual advertisement is exposed.

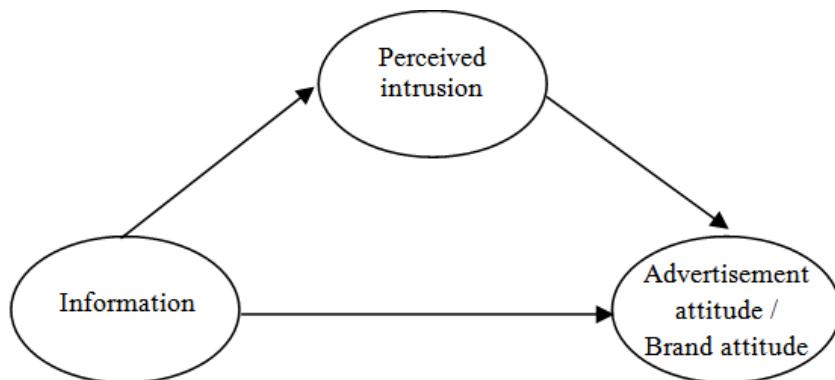
Hypothesis 1. The perceived intrusion of the influence of the information of virtual advertisements on the attitude of advertisement mediates in entertainment but will not mediate in drama.

Hypothesis 2. The perceived intrusion of the influence of the information of virtual advertisements on the brand attitude will mediate in entertainment but not in drama.

## 2.2. Research Model

This study attempted to compare and analyze whether the information of virtual advertisements according to the type of broadcasting program mediates the perceived intrusion based on the theoretical basis for deriving the hypothesis. To this end, the types of broadcasting programs were divided into entertainment and drama. Its purpose is to empirically verify the influence of the information of the virtual advertisement exposed to entertainment and drama on the advertisement attitude and brand attitude by mediating the perceived intrusion. The research model for this was set up as shown in Figure 1.

Figure 1. Research Model



## 3. Experimental Stimulus

### 3.1 Experimental Stimulus

This study confirms the influence of the information of virtual advertisements exposed to entertainment and drama on the advertisement effect by mediating the perceived intrusion. The experimental stimulus to verify this was constructed as follows.

First, the broadcasting programs in which virtual advertisements are exposed are dramas and entertainment programs. Since the familiarity of broadcasting programs can have an influence on the research results, the familiarity of entertainment and drama was confirmed to control this. As a result of checking the familiarity of the two broadcast programs, there was no difference between entertainment ( $M=2.67$ ,  $SD=1.11$ ) and drama ( $M=2.92$ ,  $SD=.76$ ) ( $t=-.72$ ,  $p=.47$ ). Second, brand familiarity exposed to virtual advertisements can affect research results. Therefore, in order to control this, a virtual coffee brand that had never been exposed to the subjects was selected. As a result of checking the familiarity of virtual advertisements, it was confirmed as Mean= 1.53 (Standard Deviation= .52). Third, the size of the virtual advertisement did not exceed a quarter of the size of the broadcast program. Fourth, regarding the exposure position of the virtual advertisement in the broadcast program, the virtual advertisement exposure was exposed for five seconds after the broadcast program was over, inserted into the program where the trailer was aired.

The production of virtual advertisements that controlled exogenous variables and the insertion of virtual advertisements in broadcast programs were produced by advertisement experts.

### 3.2. Subjects and Methods of Investigation

The subjects of this study were male and female college students in their twenties. Subjects were classified into two experimental groups. The first was a group of virtual advertisement subjects exposed to entertainment; the second was a group of virtual advertisement subjects exposed to drama. A total of 248 copies of the questionnaire data of the subjects who participated in the experiment were analysed, excluding non-response and unfaithful data. The average age of all respondents is 21.46 years old, with 120 male students (48.39%) and 128 female students (51.61%).

### 3.3. Scale and Operational Definition

#### 3.3.1 Perceived Intrusion

Perceived intrusion is a cognitive and psychological result that occurs when consumers interfere with information processing [30]. Therefore, the perceived intrusion used in this study was defined as the degree to which the virtual advertisement was bothersome, annoying, and the content intrusion felt by being disturbed by the virtual advertisement when watching the broadcasting program. To measure this, the scales used in the studies of Yang and Cho [33], Goodrich, Schiller and Galletta [29] were organized and used for this study. The metrics were described as “virtual advertisements exposed to broadcast programs are bothersome”, “virtual advertisements seem to infringe on broadcast programs”, “virtual advertisements interfere with broadcast programs”, and “virtual advertisements are bothersome to watch broadcast programs”. Four items were measured on the five-point Likert scale (1 point not at all ~ 5 points very much) and the Cronbach alpha value was 0.861.

#### 3.3.2 Advertisement Attitude

Virtual advertisement attitude is the overall emotional evaluation of advertising. To measure this, the scales used in the study of Yu and Kim [34] were rearranged and used. The metrics were described as “virtual advertisement is impressive”, “virtual advertisement was favorable”, “virtual advertisement was interesting”, and “virtual advertisement was good overall”. Four items were measured on the five-point Likert scale (1 point not at all ~ 5 points very much) and the Cronbach alpha value was 0.855.

#### 3.3.3. Brand Attitude

Brand attitude is an individual's favorable or negative feeling or attitude toward a specific brand [35]. Therefore, the attitude of the brand in this study was defined as the degree of favorable feeling and good feeling by evaluating the overall emotion of the brand appearing in the virtual advertisement. In order to measure this, the measurement items used in the research of Ku and Shim [36] were summarized and used according to this study. The measurement items were described as “I like the brand in the virtual advertisement”, “I like the brand in the virtual advertisement”, and “I feel good with the brand in the virtual advertisement”. The three items were measured on the five-point Likert (1 point not at all ~ 5 points very much) and the Cronbach alpha value was 0.891.

### 3.4 Analysis Method

This study attempted to confirm whether the influence of the information of virtual advertisements on the attitude of advertisement and brand attitudes by mediating the perceived intrusion is different when exposed to entertainment and drama. For this, data analysis was performed using SPSS Window Version 22.0. The analysis method is as follows.

First, descriptive research were used for demographic analysis of respondents. Second, exploratory factor analysis and reliability verification were conducted to verify the validity of the data constituting the variable. Third, the Baron & Kenny method was used in linear regression analysis to confirm the mediating effect. In addition, the Sobel test was added to solve the limitations of the Baron & Kenny analysis method.

The Sobel test additionally verifies the significance of indirect effects, which is a limitation of Baron & Kenny [27]. In general, a three step mediated regression analysis was performed according to the Baron & Kenny method. Fourth, in the analysis to test the mediating effect, it was confirmed whether there was multicollinearity and autocorrelation between variables. To confirm this, the collinearity statistics and Durbin-Watson index were checked. The Durbin-Watson index is performed to verify that the error term satisfies independence. The Durbin-Watson's index varies 0~4; the closer to 0 is the positive correlation; the closer to 4 is the negative correlation. Therefore, it is interpreted that there is no error correlation as it approaches 2. Autocorrelation was verified because it was judged that the multicollinearity was high if the value of the Variance Inflation Factor (VIF) was 10 or more [37].

## 4. Research Results

### 4.1. Hypothesis 1 Test

Research hypothesis 1 is a hypothesis verification that the influence of the information of virtual advertisements exposed to broadcast programs on advertisement attitude by mediating perceived intrusion will have a difference between entertainment and drama. First, the hypothesis was confirmed by using the Baron & Kenny method in the linear regression analysis whether the perceived intrusion plays a mediating role in the influence of the information of the virtual advertisement exposed to the entertainment program on the advertisement attitude. The analysis results are shown in Table 1

Table 1. The Effect of Information of Virtual Advertisements Exposed to Entertainment on Advertisement Attitude by Mediating Perceived Intrusion

Mediating Effect Verification Stage	Independent Variable	Dependent Variable	Standardization Factor		t	F	R <sup>2</sup>	ΔR <sup>2</sup>
			β					
Level 1	Information	Perceived intrusion	-.223	-2.945 **	8.671 **	.050	.044	
Level 2	Information	Advertisement attitude	.540	8.242 ***	67.927 ***	.170	.165	
Level 3 (Independent variable)	Information	Advertisement attitude	.471	7.480 ***	50.476 ***	.381	.373	
Level 3 (parameter)	Perceived intrusion	Advertisement attitude	-.307	-4.867 ***				

\*\*\*p<.001, \*\*p<.01  
(Sobel test statistic=2.638, Two-sided verification, p<.001)

In the first level of analyzing the effect of the independent variable on the parameter, it was found that information had a significant effect on the perceived invasion ( $t=-2.945$ ,  $p<.01$ ). The regression coefficient was -.223, which had a negative effect, and the higher the information of the virtual advertisement, the lower the perceived intrusion. The explanatory power to explain the intrusion with perceived intelligence

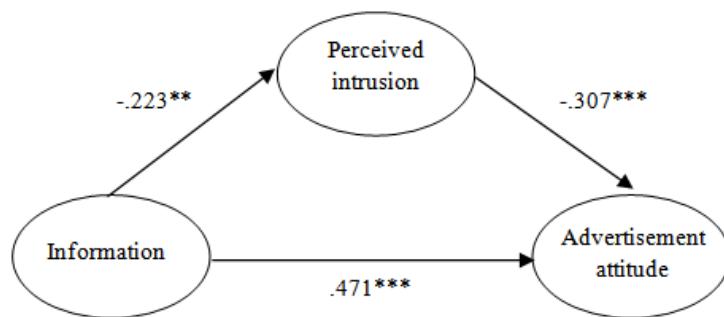
was confirmed to be 5%. In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on advertisement attitude ( $t=8.242$ ,  $p<.001$ ). The regression coefficient was .478, which had a positive effect, and it was confirmed that the higher the information of the virtual advertisement, the higher the virtual advertisement attitude. The explanatory power that information explains advertisement attitude was confirmed to be 17%. In the third level of verifying the parameter effect, the influence of the independent variable and the parameter on the dependent variable was analyzed. Prior to the verification of the mediating effect in step 3, the multicollinearity between the Durbin-Watson index and the variable was checked for autocorrelation. As a result of examining the autocorrelation, it was confirmed that there was no autocorrelation because the Durbin-Watson index was 2.268. Since the collinearity statistic was confirmed to be 1.845, it was confirmed that there was no problem with multicollinearity.

As a result of the validation of the mediation effect, it was found that both the independent variable, information ( $t=7.480$ ,  $p<.001$ ) and the parameter, perceived intrusion ( $t=-4.867$ ,  $p<.001$ ), had a significant effect on advertising attitude. The higher the information of the virtual advertisement, the lower the perceived intrusion, the higher the advertisement attitude. In summary, it was confirmed that both the independent variable, the information and the parameter, the perceived invasion, affect the dependent variable and the attitude of advertising. In addition, the  $R^2$  value increased to .381 in Level 3.

To supplement the limitations of Baron & Kenny's regression analysis to verify the mediating effect, the significance of the indirect effect was additionally verified through the Sobel test. As a result of the verification, it was confirmed that the perceived intrusion has a mediating effect when the virtual advertisement information affects the advertisement attitude ( $z=2.638$ ,  $p<.001$ ).

According to the above research results, the results of verification of partial mediation effects are expressed as a model as follows.

Figure 2. Broadcasting program Entertainment (Advertising Attitude): Mediating Effect Test Result



Next, to confirm whether the perceived intrusion plays a mediating role in the influence of the information of the virtual advertisement exposed to the drama on the advertisement attitude, the Baron & Kenny method was used in linear regression analysis. The analysis results are shown in Table.2

Table 2. The influence of information of virtual advertisement exposed to drama on advertisement attitude by mediating perceived intrusion

Mediating Effect Verification Stage	Independent Variable	Dependent Variable	Standardization Factor		F	$R^2$	$\Delta R^2$
			$\beta$	t			
Level 1	Information	Perceived intrusion	-.081	-1.032	1.065	.006	.000
Level 2	Information	Advertisement attitude	.478	6.940 ***	48.169 ***	.228	.223
Level 3 (Independent variable)	Information	Advertisement attitude	.464	6.827 ***	28.002 ***	.257	.248
Level 3 (parameter)	Perceived intrusion	Advertisement attitude	-.170	-2.505 *			

\*\*\*p<.001, \*p<.05  
(Sobel test statistic=0.960, Two-sided verification, p=.34)

As a result of the analysis, in the first level of analyzing the effect of the independent variable on the parameter, it was found that information did not have a significant effect on the perceived invasion ( $t=-1.032$ ,  $p=.304$ ). In addition, as a result of first confirming the relationship between variables in the significance of variance analysis in regression analysis, and as a result of confirming the relationship between the information of the virtual advertisement exposed to the drama and the parameter of perceived invasion, it was confirmed that it was not significant ( $F = 1.065$ ,  $p=.304$ ). In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on advertisement attitude ( $t=8.242$ ,  $p<.001$ ). The regression coefficient was .478, which had a positive effect, and it was confirmed that the higher the information of the virtual advertisement, the higher the virtual advertisement attitude. The multicollinearity between the Durbin-Watson index and the variable was confirmed. As a result of the review, it was confirmed that the Durbin-Watson index was 1.540 and the collinearity statistic was .987.

This study used the most representative Baron & Kenny's method to confirm the mediating effect. Baron & Kenny's three-level process to verify the parameter effect is to first verify whether the independent variable has a significant effect on the parameter in level 1. However, it was found that the information of the virtual advertisement exposed to the drama did not have a significant effect on the parameters of the perceived intrusion. In the Baron & Kenny method, to verify the mediating effect, the significant influence relationship between level 1 and level 2 must be satisfied. However, in the advertising attitude that mediated the perceived intrusion of the virtual advertisement exposed to the drama, it was found that Baron & Kenny's analysis method to verify the mediating effect was not satisfied.

In summary, hypothesis 1 shows that the perceived intrusion has a mediating effect when the information of the virtual advertisement exposed to the entertainment program influences the advertisement attitude. However, the mediating effect does not appear in the drama. Therefore, research hypothesis 1 was adopted.

#### 4.2. Hypothesis 2 Test

Research hypothesis 2 is a hypothesis verification that the influence of the information of virtual advertisements exposed to broadcast programs on brand attitude by mediating perceived intrusion will differ between entertainment and drama. To check whether the perceived intrusion plays a mediating role in the influence of the information of virtual advertisements exposed to entertainment on the brand attitude, it was confirmed using the Baron & Kenny method in linear regression analysis. The analysis results are shown in Table 3.

Table 3. The Influence of the information of Virtual Advertisement Exposed to Entertainment on Brand Attitude by Mediating Perceived Intrusion

Mediating Effect Verification Stage	Independent Variable	Dependent Variable	Standardization Factor	t	F	R <sup>2</sup>	ΔR <sup>2</sup>
			<i>b</i>				
Level 1	Information	Perceived intrusion	-.223	-2.945 **	8.671 **	.050	.044
Level 2	Information	Brand attitude	.414	5.850 ***	34.22 1 ***	.172	.167
Level 3 (Independent variable)	Information	Brand attitude	.376	5.249 ***	20.45 7 ***	.200	.190
Level 3 (parameter)	Perceived intrusion	Brand attitude	-.171	-2.391 *			

\*\*\*p<.001, \*\*p<.01, \*p<.05 Perceived tooth  
(Sobel test statistic=2.228, Two-sided verification, p<.05)

In the first level of analyzing the influence of independent variables on parameters, it was found that information had a significant effect on perceived invasion ( $t=-2.945$ ,  $p<.01$ ). The regression coefficient was  $-.223$ , which had a negative effect, and it was confirmed that the higher the information of the virtual advertisement, the lower the perceived intrusion. The explanatory power to explain the intrusion with perceived intelligence was confirmed to be 5%.

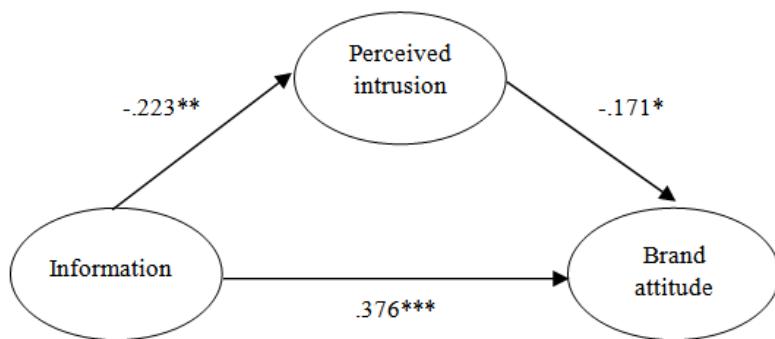
In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on brand attitude ( $t=5.850$   $p<.001$ ). The regression coefficient was  $.414$ , which had a positive effect, and the higher the information of the virtual advertisement, the higher the brand attitude. The explanatory power that information explains brand attitude was confirmed to be 17.2%.

Prior to the verification of the mediating effect in step three, the multicollinearity between the Durbin-Watson index and the variable was checked for autocorrelation. As a result of examining the autocorrelation, it was confirmed that there was no autocorrelation because the Durbin-Watson index was 1.866. Since the collinearity statistic was confirmed to be 1.00, it was confirmed that there was no problem with multicollinearity. In the third level of verifying the parameter effect, the influence of the independent variable and the parameter on the dependent variable was analyzed. As a result, it was found that both the

independent variable, information ( $t=5.249$   $p<.001$ ) and the parameter, perceived intrusion ( $t=-2.391$ ,  $p<.05$ ), had a significant effect on brand attitude. It was confirmed that the higher the information of the virtual advertisement and the lower the perceived intrusion, the higher the brand attitude. In summary, it was confirmed that both the independent variables, the information and the parameter, the perceived invasion, have a partial mediating effect because they influence the brand attitude, the dependent variable. In addition, as a result of the Sobel verification, it was confirmed that when the information of virtual advertisements affects advertisement attitude, there is a partial mediating effect of perceived intrusion ( $z=2.228$ ,  $p<.05$ ).

According to the above research results, the results of verification of partial mediation effects are expressed as a model as follows.

Figure 2. Broadcasting program entertainment (Brand attitude): Mediating effect test result



Regression analysis was conducted to confirm whether the perceived intrusion mediates the influence of the information of the virtual advertisement exposed to the drama on the brand attitude. The analysis results are shown in Table 4.

Table 4. The Influence of Information of Virtual Advertisement Exposed to Drama on Brand Attitude by Mediating Perceived Intrusion

Mediating Effect Verification Stage	Independent Variable	Dependent Variable	Standardization Factor		t	F	$R^2$	$\Delta R^2$
			$\beta$	Standardization Factor				
Level 1	Information	Perceived intrusion	-.081		-1.032	1.065	.006	.000
Level 2	Information	Brand attitude	.532		8.023	64.365 ***	.283	.279
Level 3 (Independent variable)	Information	Brand attitude	.511		8.054 ***	44.161 ***	.353	.345
Level 3 (parameter)	Perceived intrusion	Brand attitude	-.265		-4.178 ***			

\*\*\* $p<.001$ , \*\* $p<.01$

(Sobel test statistic=0.381, Two-sided verification,  $p=.70$ )

As a result of the analysis, in the first level of analyzing the influence of independent variables on the parameters, the information of virtual advertisements did not have a significant effect on perceived intrusion ( $t=-1.032$ ,  $p=.304$ ). In addition, the relationship between variables was confirmed by verifying the significance of variance analysis in regression analysis. As a result, it was confirmed that the influence of the virtual advertisement exposed to the drama on the information and the parameters of the perceived intrusion was not significant ( $F=1.065$ ,  $p=.304$ ). In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on brand attitude ( $t=8.023$ ,  $p<.001$ ). The regression coefficient was .532, which had a positive effect, and it was confirmed that the higher the information of the virtual advertisement, the higher the brand attitude. The multicollinearity between the Durbin-Watson index and the variable was confirmed. As a result of the review, it was confirmed that the Durbin-Watson index was 1.801 and the collinearity statistic was .987. It has been verified that there is no problem with multicollinearity.

This study used the most representative Baron & Kenny's method to confirm the mediating effect. Baron & Kenny's three-level process to verify the parameter effect is to first verify whether the independent variable has a significant effect on the parameter in level 1. However, it was confirmed that the information of the virtual advertisement exposed to the drama did not significantly affect the parameters of the perceived intrusion. Therefore, it was found that the brand attitude that mediated the perceived intrusion of the virtual advertisement exposed to the drama was not satisfied with the Baron & Kenny analysis method to verify the mediating effect.

In summary, hypothesis 2 shows the mediating effect of perceived intrusion when the information of virtual advertisements exposed to entertainment programs affects brand attitude, but no mediating effect in drama. Therefore, the arts and research hypothesis 2 was adopted.

## 5. Discussion

This study started from the question: the virtual advertisements, which can be exposed to various broadcasting programs, shall interfere with broadcasting contents according to the expansion of virtual advertisements? To confirm this, the hypothesis was verified that when the information of a virtual advertisement influences the advertisement effect by mediating a perceived intrusion, the effect will be different depending on the entertainment or drama in which the virtual advertisement can be exposed.

The research results and discussion are as follows. First, it was confirmed that the information of virtual advertisements exposed to entertainment among broadcast programs mediated the perceived intrusion of consumers who watched the broadcast program to influence the attitude of advertising and brand attitude. It was found that the higher the information of the virtual advertisement, the lower the perceived intrusion, and the lower the perceived intrusion, the more positively the advertising attitude and brand attitude were. These results were confirmed to be in the same context as those of Goodrich, Schiller, and Galletta [29].

However, Choi and Do [11] found contrary to the findings that when they perceived Internet advertising as information in the study on the effect of Internet advertising, they perceived that advertising was intrusive and mediated this to negatively affect the attitude of advertisement.

Second, it was confirmed that the information of the virtual advertisement exposed to the drama did not affect the perceived intrusion. However, it was confirmed that the higher the information of the virtual advertisement, the more positive the advertisement attitude and brand attitude, and the higher the perceived intrusion, the negative influence on the advertisement attitude and brand attitude. These results

can be explained that the mediating effect of the perceived intrusion was not confirmed because the information of the virtual advertisement did not have a significant effect on the perceived intrusion. Summarizing the above results, it was confirmed that the influence of the information of the virtual advertisement exposed in the broadcasting program on the advertisement attitude and brand attitude by mediating the perceived intrusion appears differently depending on the entertainment and the drama.

Virtual advertisement has the advantage of solving the problem of advertising congestion and zapping, which are the limitations of existing advertising. However, the advantage of such virtual advertisement can be predicted that the effect may vary depending on the broadcast program to which the virtual advertisement is exposed. Virtual advertisements can be exposed in various ways within a range that does not interfere with the flow of broadcast contents, such as prologue, epilogue, rating notice, and ending part of a broadcast program. Therefore, it is implied that the virtual advertisement exposure strategy requires the exposure location and virtual advertisement execution strategy in consideration of the characteristics of the broadcast program.

The academic significance of this study is as follows. First, the effectiveness of virtual advertisement, which has not been studied before, was confirmed through advertisement information and the mediating effect of perceived intrusion. Second, in accordance with the allowance of expansion of virtual advertisements, the information of virtual advertisements according to the type of broadcasting programs and advertisement effects that mediate perceived intrusion were studied.

The limitations and suggestions of this study are as follows. First, this study has a limitation in that it was conducted only in entertainment and drama among broadcasting programs where virtual advertisements were allowed. Therefore, in future research, it is expected that a study on the advertising effect that mediates the information of virtual advertisements and perceived intrusion in sports reporting programs will be conducted. Second, the product exposed to the experimental stimulus of this study has a limitation in that it was studied using only virtual coffee brands. To confirm the effect of virtual advertisement in various aspects, we expect that research on virtual advertisement according to product involvement and product type will be conducted together. Third, various exposures are possible within a range that does not interfere with the content flow. Therefore, in future studies, it is expected that research on advertisement information according to the location of virtual advertisement exposure such as prologue, epilogue, and rating notice, and advertisement effect according to perceived intrusion will be conducted.

## REFERENCES

- Kim, Eun. Hee. "A Study on the ON Advertising effect by Virtual Advertisement Information and Perceived Intrusion." Journal of Science and Engineering Management 1.2 (2020): 1-8.
- Broadcasting Act, Article 73, Paragraph 2, No.6
- Korea Communications Commission. "Easy-to-Understand Broadcast Advertisement and Sponsorship Notification Monitoring Standards." Viewers Media Foundation (2018): 1-181.
- Lee, Hee-Bok. "1 year of execution, the status and outlook of the virtual Advertisement Market." Daehong Communications, Special Theme. (2011). 07 June 2011. <http://www.ad.co.kr/journal/column/show.do?ukey=134573>
- Kim, Eun. Hee., & Kim, Hwa-Dong. "A Study on Virtual Advertisement Avoidance: Focusing on Virtual Advertisement Types, Broadcast Program Types, and Moderating Effects of Program Flow." Korean Journal of Communication Studies 28.4 (2020): 97-124.
- Lee, Soo-Bum. Lee, Hee-Bok., & Shin, Myoung-Hee. "Research on Advertising Effect and Efficient Operation Plan for Activation of Virtual Advertisement." Korea Broadcasting Advertising Corporation, Research Report, December 2010.

- Mullin, Bernard. J., Hardy, Stephen., & Sutton, William. Sport Marketing 4th Edition. Human Kinetics: Cianfrone, 2014.
- Bennett, Gregg., Ferreira, Mauricio., Tsuji, Yosuke., Siders, Ron., & Cianfrone, Beth. "Analyzing the Effects of Advertising Type and Antecedents on Attitude towards Advertising in Sport." International Journal of Sports Marketing and Sponsorship 8.1 (2006): 56-75.
- Shin, Yongcheol. "A Study on the Effect of Virtual Advertising Exposed on Entertainment and Drama Programs." Korea University Master's Thesis, 2016.
- Shin, Myeng-Shik., & Hwang, Ji-Hyun. "Analysis of Casual Relationship among Virtual Advertisement Attributes, Advertisement Attitude, Brand Attitude and Purchase Intention in Sports Broadcasting SEM." The Korea Journal of Sports Science 24.5 (2015): 851-863.
- Choi, Eun. Young., & Doh, Sun, Jae. "The Roles of Internet Use Motivation and Ability, Advertising Perception, and General Attitude toward Advertising in the Internet Advertising Avoidance." The Korean Journal of Advertising and Public Relations 13.2 (2011): 171-197.
- Heyder, H., Musiol, K. G., & Peters, K. "Advertising in Europe: Attitudes towards Advertising in Certain Key East and West European Countries." Marketing and Research Today 20.1 (1992): 58-67.
- Kim, Yo-han., & Kim, Ji-hye. "Analysis of Attitudes Toward Advertisements of DMB TV and Fixed TV." Advertising Research 76 (2007): 29-54.
- Brackett, Lana. K., & Carr, Benjamin. N. "Cyberspace Advertising vs. other Media: Consumer vs. Mature Student Attitudes." Journal of Advertising Research 41.5 (2001): 23-32.
- Bloom, Paul N., & Krips, Jeanne. "An Experiment in The Economics of Advertising." Journal of Marketing & Public Policy 1 (1982): 25-42.
- Gao, Yuan., & Koufaris, Marios. "Perceptual Antecedents of user Attitude in Electronic Commerce." ACM SIGMIS Database 37.2-3 (2006): 42-50.
- Park, Euna. "A study on the Relationship between Perception Factors for Advertisement and General Attitude toward Advertisement." The Korean Journal of Advertising 17.2 (2006): 193-223
- Liu, Chia-ling. Eunice., Sinkovics, Rudojf. R., Sinkovics, Noemi., & Haghrian, Parissa. "Determinants of Consumer Perceptions toward Mobile Advertising - A comparison between Japan and Austria." Journal of Interactive Marketing 26 (2012): 21-32.
- Min, Gui-Hong., & Song, Jeong-Mee. "The Effects of Consumer Awareness of the Informativeness and Usefulness of Department Stores' DM Ads on the Ad Attitudes and Avoidance." Journal of Practical Research in Advertising and Public Relations 9.2 (2016): 99-120.
- Ducoffe, Robert. H. "Advertising value and advertising on the Web." Journal of Advertising Research 36.5 (1996): 21-35.
- Nordlinger, Jay. Spam Tastes Gross. National Review. 54.3 (2002): 36-38.
- An, Dae. Chun., & Kim, Sang. Hoon. "Factors Influencing Mobile Commerce Adoption in Korea -The Gender Gap." Advertising Research 88 (2011): 7-36.
- Kim, Mikyoung., & Lee, Sungmi. "Who Respond Which Cues in Mobile Advertising: Effects of Image Preference on the Perceived Value of and Attitude Towards Mobile Advertising." Advertising Research 114 (2017): 42-67.
- Yoon, Sung-Wook., & Cho, Hyun-Jung. "Roles of Brand Reputation, Product Information and Discount Rate in Mobile Advertisement." The Korean Journal of Consumer and Advertising Psychology 16.2 (2015): 291- 308.
- Kim, Yo-Han. "A Study on the Ad Avoidance Level and the Predictors of Ad Avoidance by Advertising Media." Chung-Ang University Doctoral Thesis, 2003.
- Kim, Jung Hyun., Park, Byung Hee., Lee, Myoung Chun., & Choi, Yang. Ho. "A Study on Perceived Intrusion Level-Related Variables by Internet Ad Type." Advertising Research 84 (2010): 5-28.

- Lee, Kyunglyu. "A Study on the Effect of Perceived Intrusiveness of Internet pop-up ads Interrupting Editorials on Attitude Toward pop- up Ads-Focused on the Moderating Effect of Emotion Elicited by Internet News Articles." A Journal of Brand Design Association of Korea 15.21 (2017): 71-184.
- Choi, Eun. Young., & Doh, Sun. Jae. "The Roles of Internet Use Motivation and Ability, Advertising Perception, and General Attitude toward Advertising in the Internet Advertising Avoidance." The Korean Journal of Advertising and Public Relations 13.2 (2011): 171-197.
- Kendall, Goodrich., Shu, Schiller., & Dennis, Galletta. "Consumer Reactions to Intrusiveness of Online-Video Advertisements." Journal of Advertising Research, March (2015): 37-50.
- Edwards, Steven. M., Li, Hairong., & Lee, Joo. Hyun. "Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-up Ads." Journal of Advertising 31.3 (2002): 83-95.
- Cho, Song-Hyun., & Jang, Hyeon-Gil. "The Structural Relationship and Difference During to Watch Sports Through TV by Advertising to Perceived Intrusiveness, Advertising Attitude and Advertising Avoidance." The Korean Journal of Physical Education 54.6 (2015): 309-319.
- Park, Myoung. Jin. A Study on Ad Effect and Ad Avoidance in Mobile Video Advertising focused on Perceived Intrusiveness. Hanyang University Doctoral Dissertation (2018).
- Yang, Yoon. Jik., & Cho, Chang. Hoan. "A Study of Advertising Avoidance Level and Its Predictors in Various Media." Advertising Research 92 (2012): 355-381.
- Yu, Seung. Yeob. & Kim, Eun. Hee. "The Impact of Webtoon Context, Advertisement Types and Location on the Advertising Effect in Webtoon." Korean Journal of Consumer and Advertising Psychology 20.1(2019): 1-30.
- Choi, Ji-Hoi., & Kim, Myoun. "The Effect of Familiarity and Brand Attitude of Mobile Character Products on Consumers' Purchasing Behavior - Focusing on Kakao Friends Characters." Asia-pacific Journal of Convergent Research Interchange 4.4 (2018): 1-10.
- Ku, Yunhee., & Shim, Jae. Chul. "A Study on the Mediating Effects of CSR Authenticity: Focusing on Corporate Ethical Reputation, CSR Consistency, and CSR Transparency." Journal of Public Relations 21.4 (2017): 1-29.
- Lee, Il. Hyun. Easy Flow Regression Analysis. Seoul: Hannarae Publishing House, 2019.
- Kim, Wonpyo. Advanced regression analysis (rewriting statistical analysis). Seoul: Wise In Company, 2017