Untangling the Way Smartphone–based Multiscreening Influences Attitude toward Mobile Video Advertising

Ki-Young Lee (spartan@hongik.ac.kr)

Abstract

This study aimed to explore whether and how smartphone–based multiscreening affects a consumer’s attitude toward mobile video advertising. For the latter purpose, this study proposed and empirically tested whether perceptions of advertising informativeness and advertising intrusiveness mediate the impact of smartphone–based multiscreening on attitude toward mobile video advertising. The results of an online survey (n=155) indicated that smartphone–based multiscreening was significantly and positively related to consumer attitude toward mobile video advertising and that the effects of multiscreening were partially transmitted via perceived advertising informativeness. Unexpectedly, however, the mediating role of perceived advertising intrusiveness was not supported in this study.

Keyword: Multiscreening | Attitudes toward Mobile Video Advertising | Perceived Advertising Informativeness | Perceived Advertising Intrusiveness

I. Introduction

With the advancement of convergent technologies and the limited amount of time available to spend on the media, consumers are increasingly engaging in media multitasking, the simultaneous use of multiple media (e.g., listening to radio while on the computer). In particular, it is noteworthy that “multiscreening,” a particular type of media multitasking involving the simultaneous use of multiple screens (e.g., TV, PC, Tablet PC, smartphone), is
quickly growing as a audience behavior[1].

From advertisers’ perspective, the rising prevalence of media multitasking in general and multiscreening in particular is important since the changing ways that consumers interact with media have implications for the ads placed in those media[2]. Until now, empirical evidence regarding the effects of media multitasking on consumer responses to advertising is mixed. Some studies have shown that media multitasking fosters positive responses to ads, while other studies have indicated that media multitasking has a negative impact, especially, on the cognitive dimensions of consumer responses to ads (i.e., memory)[1][3]. Still another study reported that media multitasking can lead to both positive and negative ad-related outcomes depending on how well the ad is integrated with the content storyline[4].

Against this backdrop, the primary purpose of this study was to clarify the impact of smartphone-centered multiscreening, whereas consumers use their smartphone while simultaneously using other screen media, including TV, PC, and Tablet PC, on ad-related outcomes, consumer attitude toward mobile video advertising in particular. Additionally, this study aimed to explore the psychological mechanisms through which smartphone-based multiscreening influences attitude toward mobile video advertising. For this purpose, this study proposed and empirically tested the possibility that the perceptions of advertising informativeness and advertising intrusiveness mediate the effects of smartphone-based multiscreening on mobile video advertising attitude.

II. Theoretical Background and Hypotheses

1. Media Multitasking Background

Media multitasking involves consuming media content while simultaneously engaging in other activities. Some have defined media multitasking as consuming a medium while engaging in a non-media activity (e.g., listening to music while jogging). Radio was the dominant medium used for this type of multitasking, followed by TV and the Internet, but the medium used for multitasking significantly differed depending on the nature of the activity involved[5]. For example, young people usually listened to music during homework or social interaction, and watched TV or used the Internet at the same time during meals. Others have defined media multitasking as using two or more media simultaneously (e.g., watching TV while talking on the phone). Prior research on this type of media multitasking reported the simultaneous use of TV and the Internet being the most representative in terms of multitasking pairs[6]. In recent years, the combination of media multitasking pairs has tended to shift to digital media, resulting in high simultaneous consumption associated with the Internet (Web) and mobile devices. Especially, as the spread and use of smartphones become pervasive, media multitasking involving smartphones is quickly increasing. There is empirical evidence supporting this. According to the "2017 Korea Media Panel Survey" conducted by the Korea Information Society Development Institute (KISDI), 27.7% of the total smartphone usage time was found to have been shared with other media. The same report also indicated that smartphone-based multiscreening increased
significantly and that this type of media multitasking was most frequently observed among the digital age group, implying smartphone-based multiscreening will continue to expand and strengthen over time[7].

Thanks to its multimedia capabilities and mobile Internet connectivity, smartphones allow users to freely explore and consume a variety of media content based on their preferences, without the restrictions on time and space. Today, it is common for smartphone users to watch online videos, including user-generated content and even regular TV programming, through online video streaming services such as YouTube and Netflix. Arguably, watching online videos via smartphones has become one of the most popular ways of media consumption today, especially among young audiences. As a case in point: The "MOMO (MOre MOBILE)" generation, the term which refers to teenagers who always stick to their smartphone and consider it a necessity, not an option, is prone to subscribe to the video content of their choosing while on the move[8]. Given the growth of smartphone-based multiscreening and the current status of smartphones as the main platform for online video consumption, it is necessary to understand whether and how multiscreening affects advertising attitude in the context of smartphone-based video consumption.

2. Media Multitasking Effects by Type of Outcome

Extant research has identified some of the potential advertising effects under the conditions of media multitasking, and in those studies, limited capacity processing has been the dominant framework employed. According to Lang[9], there is a limit in the amount of cognitive resources that can be allocated to each of the sub-processes in processing and storing information: encoding, storage, and retrieval. Since there are limited cognitive resources available at each stage, any distraction from the target information would require some of those limited resources, thus taking them away from processing the target information. This would then entail a failure to encode, store, or retrieve that information[9].

Compared to using a single medium, during media multitasking the amount of information emitted from the media is more likely to exceed an individual’s information processing capabilities. From the limited capacity perspective, this suggests an increased possibility of information loss due to a lack of cognitive resources required for properly processing information. This possibility would then result in a pattern of reduced memory of media content, including ads. Indeed, prior research has consistently reported that media multitasking has a negative impact on memory for advertising messages[3][10].

Conversely, media multitasking could play a different role with respect to the attitudinal dimensions of advertising effects. While memory is expected to suffer due to increased use of processing resources, it can be predicted that consumers would display more positive attitudes in response to the ads exposed during multitasking, primarily due to a lack of cognitive resources needed for critical thinking. More specifically, it can be argued that the distraction and cognitive overload elicited during multitasking will limit consumers’ ability to engage in counter-arguing against
advertising claims, thereby resulting in increased acceptance of persuasive messages[11]. Supporting this, Jeong and Hwang[3], as well as Segijn, Voorveld, and Smit[1] found that compared to single-tasking, media multitasking led to less counter-arguing and more positive attitudes toward the ads seen during multitasking.

Based on the above discussion, the first hypothesis was presented as follows.

**H1:** Smartphone-based multiscreening will have a positive impact on consumer attitude toward mobile video advertising.

3. **Underlying Mechanisms: Advertising Informativeness & Advertising Intrusiveness**

Advertising informativeness refers to the extent to which the advertising message includes informational contents[12]. Traditionally, informing customers about new products and services and increasing customer awareness for the differences of products have been considered one of the major functions of advertising[13]. In the mobile advertising context, informativeness of an ad has proven to be a critical determinant of perceived advertising value and thus crucial for the effectiveness of mobile advertising[14].

Prior research indicates that the perception of ad informativeness itself is moderated by consumers’ persuasion knowledge, which represents consumers’ beliefs about the advertiser’s motives, strategies and tactics, and appropriateness of persuasion tactics[15]. Once persuasion knowledge is activated, consumers likely regard the intent of the advertiser manipulative and view advertising claims with great suspicion[15]. As mentioned earlier, cognitive overload during multitasking prevents consumers from engaging in critical thinking. From the persuasion knowledge view, this suggests that compared to single-tasking, during multitasking, the activation potential of persuasion knowledge is likely to be reduced. This is a rather straightforward prediction in that the activation and application of one’s persuasion knowledge is a relatively effortful and controlled process requiring considerable amount of cognitive resources[16]. Thus, it can be argued that a consumer’s evaluation of informativeness of the ads seen during multitasking will be in a more favorable light.

Further, perceived informativeness is associated with positive judgments about the ad. Perceptions of informative content positively influence consumers’ assessment of advertising value[13], suggesting the importance of informativeness to building receptivity toward the ad (e.g., positive attitude toward the ad). In a mobile advertising context, ads containing information perceived as useful, have been shown to elicit less irritation and thus more likely to be considered a valuable source of product information, resulting in a positive attitude toward mobile ads[14][17].

Based on the above discussions, the second hypothesis was presented as follows.

**H2:** Perceived ad informativeness will mediate the effects of smartphone-based multiscreening on consumer attitude toward mobile video advertising.

Advertising intrusiveness has been defined as “the degree to which ads in a media vehicle interrupt the flow of an editorial unit” (p. 77)[18]. Ad intrusiveness operates as a psychological reactance to ads that interfere with an individual’s ongoing cognitive
activity[19]. Psychological reactance represents a negative reaction to perceived impositions on an individual’s freedom and autonomy. Confronted with a loss of freedom, people experience reactance, which is a blend of emotional and cognitive processes, that triggers behavior intended to regain one’s freedom and autonomy[20]. Since mobile video ads are typically inserted within a video clip, consumers are forced to watch it in its entirety or at least partially until the “skip ad” button is displayed. Thus, consumers are likely to perceive mobile video ads as coercive and intrusive. Interestingly, prior research implies that increased levels of media multitasking would be in negative association with a consumer’s perception of ad intrusiveness. Compared to light multitaskers, heavy multitaskers tend to be a distracter - someone who is worse at filtering irrelevant information and inclined to take risks in exploring unknown stimuli[21]. Applying this logic to the context of this study, it is reasonable to assume that heavy multiscreeners would be more open and responsive to irrelevant media content like advertising, although it is interruptive in nature[22]. As a result, heavy multiscreeners may perceive mobile video ads as less intrusive. Moreover, the distracting and rather inattentive multiscreening situation itself may make mobile video ads less intrusive since a consumer’s limited attentional capacity is divided across multiple screens simultaneously used.

Once evoked, perceived ad intrusiveness is expected to elicit a negative response toward the ad causing the intrusion. A perception of an ad as intrusive elicits negative emotional feelings (e.g., irritation)[19], and such feelings will be reflected unfavorably on the ad. In the context of this study, this means that as mobile video ads are considered intrusive by interfering with a smartphone user’s viewing of media content of their choosing, negative emotional reactions may then materialize in the form of an unfavorable appraisal of mobile video advertising. Based on the above discussions, the third hypothesis was presented as follows.

H3: Perceived ad intrusiveness will mediate the effects of smartphone-based multiscreening on consumer attitude toward mobile video advertising.

III. Research Methods

1. Research Procedure and Participants

An online survey was administered among adults aged 15 or older with a sample of 155 participants. The survey respondents were sampled from an online panel directory of a major research firm in South Korea, November, 2017. The sample inclusion criteria were a smartphone user (1) who owned all of the following three screen media - TV, computer (desktops or laptops), and Tablet PC - at the time of the survey, and (2) who had seen mobile video ads on their smartphone. The sample included 47.7% female participants and 52.3% male participants. In terms of age group, the respondents aged 15 to 19 comprised 12.3% of the total, those 20 to 24 years 18.1%, those 25 to 29 years 22.6%, those 30 to 34 years 34.8%, and those 35 or older 12.3%. Participants spent an average of 3.1 hours watching mobile videos on their smartphone per day: 1.2 hours watching real-time video and 1.9 hours watching Video On Demand.
2. Measures

The survey questionnaire items relevant to this study include measures of smartphone-based multiscreening, perceived ad informativeness, perceived ad intrusiveness, and attitude toward mobile video advertising. All measures were adopted from existing scales and, if needed, modified to better fit the context of this study [Table 1].

Smartphone-based multiscreening, the independent variable of this study, measured, on a 5-point Likert scale (1=strongly disagree, 5=strongly agree), the extent to which respondents engage in the media activity simultaneously with each of the three screen media, including TV, PC, and Tablet PC, while watching mobile videos on their smartphone [23]. Since responses to these three items were highly correlated ($\alpha=0.736; M=3.136; SD=0.878$), they were summed and averaged to form an index for smartphone-based multiscreening.

Perceived ad informativeness was measured by five, 7-point Likert items adapted from Ducoffe [13], that asked about mobile video ad with questions, including mobile video ad is "a good source of product information," “supplies relevant product information,” “provides timely information,” etc. Since responses to these five items were highly correlated ($\alpha=0.931; M=4.124; SD=1.242$), they were summed and averaged to form an index for perceived ad informativeness.

Perceived ad intrusiveness was measured by seven, 7-point Likert items adapted from Edwards, Li, and Lee [19], that asked to rate how respondents felt about mobile video ad with attributes like "disturbing," "forced," “interfering,” etc. Since these seven items were highly correlated ($\alpha=0.899; M=4.677; SD=1.119$), they were summed and averaged to form an index for perceived ad intrusiveness.

Finally, attitude toward mobile video ad, the dependent variable of this study, was measured with three, 7-point Likert items adapted from Mitchell and Olsen [24] that asked to rate their feelings toward mobile video ad with questions, including mobile video ad is "good," "likable," and "interesting" ($\alpha=0.936; M=3.499; SD=1.315$). Since these three items were highly correlated, they were summed and averaged to form an index for attitude toward mobile video ad. Finally, gender and age were measured as controls.

<table>
<thead>
<tr>
<th>Table 1. Reliability analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructs</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Smartphone-based multiscreening</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Perceived Ad Informativeness</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Perceived Ad Intrusiveness</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Attitude toward Mobile Video Ad</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

IV. Results

As you can see in [Table 2], smartphone-based multiscreening was positively correlated with perceived ad informativeness ($r=0.287, p<0.001$).
and in turn, perceived ad informativeness was positively correlated with attitude toward mobile ad \((r=.733, p<.001)\), suggesting its potential function as a mediator for the relationship between smartphone-based multiscreening and mobile video ad attitude. Unexpectedly, however, smartphone-based multiscreening was not significantly correlated with perceived ad intrusiveness \((r=-.035, p=.668)\). As expected, perceived ad intrusiveness was negatively correlated with mobile video ad attitude \((r=-.238, p<.01)\).

To determine whether the two proposed mediators of this study - perceived ad informativeness and perceived ad intrusiveness - mediate the impact of smartphone-based multiscreening on consumer attitude toward mobile video ad, mediation analysis specified by Baron and Kenny\[25\] was conducted. For all the analyses, age and gender were entered as controls. To establish mediation, the following must hold: (1) smartphone-based multiscreening must influence the mediator (perceived ad informativeness and perceived ad intrusiveness), (2) smartphone-based multiscreening must influence the dependent variable (attitude toward mobile video ad), and (3) the mediator must influence the dependent variable when regressed in conjunction with the independent variable. Providing these conditions are met, the effect of the independent variable on the dependent variable must be less or become non-significant in the third step than in the second step\[25\]. The results are presented in [Figure 1].

The first step of analysis indicated that smartphone-based multiscreening positively affected perceived ad informativeness \((\beta = .299, p<.001)\), yet did not yield a significant result for perceived ad intrusiveness \((\beta=-.029, p>.05)\). This lack of significance excluded perceived ad intrusiveness for further mediation analysis. The second step demonstrated that smartphone-based multiscreening positively affected mobile video ad attitude \((\beta=.343, p<.001)\). Finally, the third step supported perceived ad informativeness as a mediator for the relation between multi-screening and mobile video ad attitude \((\beta =.696, p<.001)\). Accordingly, the effect of smartphone-based multiscreening on mobile video ad attitude diminished, but still significant \((\beta=.135, p<.05)\), when included in the analysis with perceived ad informativeness, suggesting perceived ad informativeness partially mediated the impact of smartphone-based multiscreening on attitude toward mobile video advertising.

Additionally, in an attempt to verify the significance of the mediation effects via perceived ad informativeness, the Sobel’s test was performed. The results are presented in [Table 3]. The results indicated that the indirect effect of smartphone-based multiscreening on attitude toward mobile video ad was significant, suggesting that perceived ad informativeness successfully transmitted the effects of smartphone-based multiscreening on attitude toward mobile video ad.
Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.

Overall, the results were supportive of a positive impact of smartphone-based multiscreening on mobile video ad attitude, as well as a mediating role of perceived ad informativeness, thus confirming H1 and H2. Unexpectedly, however, a mediating role of perceived ad intrusiveness was not supported, thus rejecting H3.
mobile advertising on multiscreeners. Since multiscreeners are expected to be less critical and more receptive toward ad claims, advertising strategies that have proved effective in low involvement situations (e.g., using celebrity endorsers, jingles, and explicit message presentations) can be considered in the development of ads targeted toward multiscreeners.

This study is an early attempt to explore the relation between media multitasking/multiscreening and attitude toward mobile advertising. Thus, the interpretations and applications of the findings of this study should be approached cautiously. In particular, it is important to note that being a cross-sectional survey, the findings of this study do not warrant causal inferences among the study variables. For instance, the association between multiscreening and perceived ad informativeness observed in this study might have been driven, at least partially, by media usage levels (e.g., heavy vs. light media users) that would be related to both variables. Further research with an experimental approach, incorporating varying degrees of multiscreening and controlling for known confounding variables, is needed to replicate the findings of this study and thus draw firmer conclusions.

스마트폰 기반 멀티스크리닝과 모바일 비디오 광고 태도: 매개효과 검증

185


저자 소개

이기영(Ki-Young Lee) 정회원
[ 1998년 :미국 노스웨스턴 대학교 (M.A. in Radio/TV/Film)
[ 2006년 : 미국 미시간 주립대학교 (Ph.D. in Mass Media)
[ 2013년 3월 ~ 현재 : 홍익대학교 광고홍보학부 교수

<관심분야> : 인터랙티브 광고/미디어