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# The Underlying Mechanisms of Multiscreening Effects

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**Multiscreening, a relatively new form of media multitasking in which people use multiple screens simultaneously, has implications for the effects of persuasive messages due to limited cognitive capacities of people and concurrent modalities of the screens (i.e., both visual). The aim of the study is to examine underlying mechanisms (i.e., recognition, counterarguing, and enjoyment) of the effect of multiscreening on evaluative outcomes (i.e., brand attitude, message attitude, and purchase intention). The experiment ( $N = 182$ ) showed that both recognition and counterarguing are underlying mechanisms of the effect of multiscreening on evaluative outcomes. Multiscreening has a negative effect on evaluative outcomes by recognition and a positive effect on evaluative outcomes by counterarguing.**

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Media multitasking, the simultaneous use of multiple media (e.g., Jeong and Hwang 2015; Voorveld 2011), is a pervasive phenomenon (e.g., Rideout, Foehr, and Roberts 2010; Voorveld et al. 2014). A recent report about media use showed that 28% of the time that people spend on media consists of media multitasking (MediaTijd 2014). The rise of this phenomenon has led to an increasing concern among advertisers, because relatively little is known about advertising effectiveness under

media multitasking circumstances. In the advertising literature, assumptions are often based on monomedia consumption (Pilotta et al. 2004). However, with the arrival of convergent technologies and the same amount of time available to spend using these media, consumers are increasingly engaging in media multitasking (e.g., Jeong and Fishbein 2007; Pilotta et al. 2004; Rideout, Foehr, and Roberts 2010). For example, nearly half of tablet and smartphone owners indicate that they use their devices every day while watching TV (Nielsen 2013). This type of media multitasking is also known as multiscreening (i.e., the simultaneous use of multiple screens; Segijn 2016). Multiscreening is becoming a daily practice (Nielsen 2013), but it is relatively unknown how this type of behavior affects the effectiveness of advertisements.

The current study examines advertising effectiveness in terms of evaluative outcomes (i.e., brand attitude, message attitude, and purchase intention) that are important for advertisers (e.g., Vakratsas and Ambler 1999). Only recently have scholars started to examine how media multitasking influences evaluation. So far, some evidence suggests media multitasking would lead to more positive evaluations (Chinchanachokchai, Duff, and Sar 2015). However, another study showed that media multitasking could lead to both positive and negative evaluations depending on how well the advertisement is integrated into the storyline (Yoon, Choi, and Song 2011). Scholars should be careful in drawing conclusions based on the limited available empirical evidence and contradicting results of the effect of media multitasking on evaluation. More research is needed to examine this effect. Furthermore, knowledge is limited about the underlying mechanisms of the effect of media multitasking on evaluation. The aim of the current study is, therefore, to gain an understanding of the underlying processes of the effect of multiscreening on evaluative outcomes by examining the three proposed underlying mechanisms, namely, recognition, counterarguing, and enjoyment.

First, we examine recognition as a mechanism, because, to our knowledge, it has never been examined before as an underlying mechanism of media multitasking on evaluation, although recognition has been related to both concepts separately. Second, we examine counterarguing as a mechanism, because counterarguing has been previously proposed as an underlying mechanism of the effect of media multitasking on

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evaluation (e.g., Jeong and Hwang 2012, 2015) but has never been tested in a full mediation model. Finally, we examine enjoyment as a mechanism, because only recently have scholars started to examine this mechanism related to media multitasking and advertising (Chinchachokchai, Duff, and Sar 2015), but enjoyment has never been tested as an underlying mechanism of media multitasking on evaluation. Thus, the current study provides a deeper understanding of the effect of multiscreening on evaluation by examining three underlying mechanisms, of which one is predicted to have a negative effect of multiscreening on evaluation (i.e., recognition) and the other two are predicted to have a positive effect on evaluation (i.e., counterarguing and enjoyment).

## THEORY

A starting point for examining how multiscreening influences consumers' processing of advertising is to consider how consumers process messages. A basic assumption is that people have capacities for encoding, storing, and retrieving information (Lang 2000). However, the limited capacity approach argues that people are limited in the amount of cognitive resources they can allocate to different tasks (Kahneman 1973; Lang 2000). During multiscreening, multiple tasks compete for these cognitive resources. Because of the limited cognitive capacities, attention to one message should inherently come at the expense of attention to the other message (Lang 2000). According to this model, multitasking is limited by the availability of people's resources. This is known as capacity interference (Kahneman 1973).

In addition to capacity interference, multiscreening also involves structural interference (Jeong and Hwang 2015). Structural interference occurs when media have concurrent modalities (Kahneman 1973), for example, when both media are visual or when one medium is visual and the other medium is audiovisual (Jeong and Hwang 2015). According to the dual-channel paradigm, people have different channels (or pools) through which to process visual and auditory information (Baddeley 1997; Paivio 1986; Wickens 2002). Thus, when people need to process information for multiple tasks that contain the same modality, this information will be processed through the same sensory channel, which will lead to structural interference. Multiscreening is a form of media multitasking that involves concurrent modalities, which has implications for the processing of information in both tasks.

### Effects of Multiscreening on Evaluative Outcomes

Evaluative outcomes are important for persuasion (e.g., Petty and Wegener 1998; Vakratsas and Ambler 1999). Some researchers state that media multitasking may affect evaluative outcomes (Chinchachokchai, Duff, and Sar 2015; Jeong and Hwang 2012, 2015; Voorveld 2011; Yoon, Choi, and Song 2011). However, little is known about the effects of media multitasking or multiscreening on these evaluative outcomes

(i.e., brand attitudes, message attitude, and purchase intentions). Three possible underlying mechanisms for the effect of multiscreening on evaluative outcomes are discussed.

### First Underlying Mechanism: Recognition

A first underlying mechanism that could explain how multiscreening may influence evaluative outcomes is recognition of the advertised brand. According to the limited cognitive capacity approach of mediated messages (Lang 2000), information processing consists of three subprocesses: encoding, storing, and retrieving information. As mentioned, people need cognitive capacities to process information. Yet these cognitive capacities are limited. Multiscreening will affect consumers' information processing of an advertisement (Angell et al. 2016). How well someone is able to recognize a certain message depends on how well someone was able to encode or store the message (Lang 2000). Thus, the ease of recognition of an advertisement or brand depends on how well this advertisement or brand was encoded or stored. Multiscreening interferes with the encoding and/or storing process, because people have limited capacities for these processes due to the multiple tasks. Thus, encoding and/or storing is hindered, and it will be more difficult to recognize the brand afterward.

In addition, recognition could influence evaluative outcomes. A naive theory of recognition is that stimuli which are easy to recognize are more liked than stimuli which are more difficult to recognize (Alter and Oppenheimer 2009; Bornstein and D'Agostino 1992; Zajonc 1968). The mere exposure hypothesis is an example of this process (Zajonc 1968). This hypothesis states that people prefer familiar stimuli over novel stimuli. Familiar stimuli are easier to recognize and, therefore, more liked than novel stimuli. Researchers argue that stimuli that are recognized more easily are more well liked because they misattribute the easiness of recognition for liking the stimulus (Bornstein and D'Agostino 1992). Thus, the easier a brand is recognized, the more it is liked. In sum, recognition depends on how well a message is encoded and/or stored, and multiscreening interferes with these processes. In addition, when something is more difficult to recognize, it is less likely that people will experience positive feelings for this stimulus.

**H1:** People who are multiscreening will have more difficulty recognizing the brand and will therefore have more negative evaluative outcomes than people who are using only one medium at a time.

### Second Underlying Mechanism: Counterarguing

The second underlying mechanism that could explain how multiscreening may influence evaluative outcomes is counterarguing. Counterarguing is a strategy for resisting a persuasive message. It entails thoughtfully elaborating on a message and thinking of arguments that will reject or are inconsistent with the persuasive message (Moyer-Gusé and Nabi 2010). Because of limited cognitive capacities, this thoughtful elaboration

decreases during media multitasking (Jeong and Hwang 2012, 2015). This tendency is consistent with the counterarguing inhibition hypothesis (Keating and Brock 1974), which also suggests counterarguing can be reduced by a form of distraction, such as multiscreening. In addition, reduced counterarguing leads to increased acceptance of messages (Moyer-Gusé and Nabi 2010).

To the best of our knowledge, the relationship between media multitasking and counterarguing has been examined only by Jeong and Hwang (2012, 2015). They found that media multitasking reduced counterarguing, and they showed that people who were multitasking made significantly fewer counterarguments than people who were performing only one task at a time. In addition, they found that when people were multitasking with visual–visual media or with visual–audiovisual media, those people also made significantly fewer counterarguments than people who were multitasking with visual–audio media. They argued that a decrease in counterarguments would allow media multitasking to increase persuasion; however, they did not test this mediation effect of media multitasking on evaluative outcomes through counterarguing. They argued only that a decrease in counterarguments would increase persuasion. In addition, this mediation model has not been empirically examined for advertisements. In the current study, this mediation effect is tested, and the following hypothesis is formulated:

**H2:** People who are multiscreening will be less likely to counterargue and will, therefore, have more positive evaluative outcomes than people who are using only one medium at a time.

### Third Underlying Mechanism: Enjoyment

A third underlying mechanism that could explain how multiscreening may influence evaluative outcomes is enjoyment (Lang and Chzran 2015; Wang and Tchernev 2012). A popular assumption is that multiscreening would increase enjoyment (e.g., Bardhi, Rohm, and Sultan 2010; Lang and Chzran 2015). Studies on the motives of media multitaskers have shown that enjoyment is a motive to engage in multitasking (Bardhi, Rohm, and Sultan 2010; Hwang, Kim, and Jeong 2014) and that emotional needs are gratified when media multitasking (Wang and Tchernev 2012).

Recently, scholars have started to examine this concept as a mechanism of media multitasking. A study by Chinchanchokchai, Duff, and Sar (2015) examined advertising and multiwindow multitasking and they found that people who are multitasking with two tasks enjoyed completing the task more than people who had to perform only one task. In their study all participants had to watch commercials on a computer screen as one of the tasks. In the multitasking conditions the participants also had to monitor another window on the screen and respond to letters or a punctuation mark that appeared in these windows. Their explanation for the effect of multitasking

on enjoyment is that time is perceived as going faster when people are multitasking instead of attending to only one task. In addition, the perception that time is going faster is associated with higher levels of task enjoyment. Indeed, they found a positive effect of multitasking on enjoyment. However, they did not test the mediation of multitasking on enjoyment through perceptions of time progress. In addition to the effect on enjoyment, they also found that participants who combined more tasks had more positive message (i.e., ad) attitudes. The combination of these findings touches on the idea that media multitasking increases enjoyment and this, in turn, will increase message evaluations.

However, Chinchanchokchai, Duff, and Sar (2015) also did not test the full mediation model of the effect of media multitasking on message attitude mediated through enjoyment. Furthermore, they tested it only for message attitude and not for other evaluation outcomes, such as brand attitude or purchase intention. The current study examines enjoyment as an underlying mechanism of media multitasking on evaluation and tests the full mediation on the three evaluation outcomes. Thus, doing multiple things at the same time is more enjoyed than just doing one thing (e.g., Bardhi, Rohm, and Sultan 2010; Lang and Chzran 2015). In addition, enjoyment could increase evaluative outcomes through a carryover effect (Moorman, Neijens, and Smit 2005). The following hypothesis is formulated:

**H3:** People who are multiscreening will experience more enjoyment and will therefore have more positive evaluative outcomes than people who are using only one medium at a time.

## METHOD

### Sample

The study was conducted at the University of Amsterdam. Participants were mainly undergraduates who were recruited through an online subject pool, and flyers and posters were posted throughout the university building. In total, 182 undergraduates joined the experiment ( $M_{\text{age}} = 22.75$ ,  $SD_{\text{age}} = 4.36$ ; 60.6% female). The participants received an incentive of €5 or research credit for participation.

### Design

The experiment had a single factor (media) between-subjects design. The media factor consisted of four conditions: (1) a multiscreening (MS) condition, in which the participants had to watch television and use a tablet simultaneously; (2) a sequential tasking (SQT)<sup>1</sup> condition, in which the participants first watched television and then used the tablet; (3) a single tasking TV (ST TV) condition, in which the participants only watched television; and (4) a single tasking tablet (ST Tab) condition, in which the

participants only used a tablet. The participants were randomly assigned to one of the four conditions.

### Procedure

We designed the experiment to approximate a natural multitasking environment by conducting the experiment in a room that looked like a living room. A maximum of five participants could participate at the same time, but they were told that it was an individual task (the researcher could monitor the participants through a one-way mirror). The participants read and signed an informed consent form before participating in the study.

We asked the participants to imagine that they were watching TV on a regular weekday. The program that they were watching was almost finished, and they wanted to know what the following TV show was and whether there was any interesting program on another channel. In all conditions, the focus of the task was not on the advertisements, and the participants had the same amount of time to use the media. In the SQT condition only the time was doubled because the participants in this condition used the two media sequentially. After media use the participants were asked to fill out a questionnaire where the variables were displayed in the following order: explicit recognition, perceptual identification task, evaluative outcomes, enjoyment, counterarguing, control variables, and background variables (i.e., gender and age).

### Stimulus

*Content on TV.* The content on TV consisted of the end of a TV show, a commercial break, and the beginning of the next TV show. The commercial break consisted of one target and eight filler advertisements to compose a typical commercial break (3 minutes and 50 seconds). To prevent primacy and recency effects (e.g., Duncan and Murdock 2000) the target ad was placed in the fourth position. To prevent bias resulting from strong preexisting attitudes and knowledge, all advertisements were relatively unknown existing advertisements broadcasted in Belgium, a different country with the same language. In the target ad the brand was mentioned in words and presented visually.

*Pretest of target brand.* To select the advertisements, two evenings of advertisements on three commercial TV channels of Belgium were recorded. This step yielded 544 advertisements for 164 different brands. Of these brands, 39 brands were not familiar in the Netherlands. To select a target brand, the following criteria were formulated: the brand should be (1) unfamiliar in the Netherlands, (2) presented visually and verbally in the advertisement because of the concurrent modalities, (3) gender neutral, and (4) a relevant product for students. Two brands (i.e., Cookeo and SodaStream) met the criteria and were included in a pretest. The filler ads were chosen from the same pool of recorded advertisements to establish an ecological, valid commercial break. They were also unfamiliar brands in the Netherlands.

In the pretest ( $N = 31$ ,  $M_{\text{age}} = 25.45$ ,  $SD_{\text{age}} = 7.1$ ; 81.0% female), we measured brand involvement (Zaichkowsky 1985), brand attitude (Voorveld, Neijens, and Smit 2011), brand likeability (Smit, Van Meurs, and Neijens 2006), and brand familiarity (Kent and Allen 1994) on a 7-point Likert scale. No significant difference between brands appeared for involvement, attitude, or likeability. However, Cookeo was significantly more familiar ( $M = 3.00$ ,  $SD = 1.92$ ) than SodaStream ( $M = 1.72$ ,  $SD = 1.35$ ). Therefore, we choose SodaStream as the target brand (for an overview of the statistics, see Table 1).

*Content on the tablet.* The content on the tablet consisted of a professionally designed application of a TV guide and could be adjusted for the purpose of the study. We used a TV guide application because it is the most common activity related to TV content for which people use their device (Stichting Kijkonderzoek [SKO] 2013). A banner was placed in the TV guide, and it was visible on the screen the entire time. Thus, in all conditions the participants were exposed to the target brand SodaStream.

### Dependent Variables

*Evaluative outcomes.* The evaluative outcomes consisted of brand attitudes, message attitudes (for both the TV ad and banner), and purchase intentions. We measured brand attitude with a 7-point semantic differential scale (Chang and Thorson 2004; Voorveld, Neijens, and Smit 2011). The endpoints of the scale consisted of *Bad/Good*, *Unappealing/Appealing*, *Not*

TABLE 1  
Overview Statistics of Pretest Variables

Variables	Cronbach's Alpha	F Value	p Value	95% CI
Brand involvement	.93	0.89	.598	[-0.60, 1.02]
Brand attitude	.91	0.15	.794	[-0.79, 1.03]
Brand likeability	.76	0.79	.398	[-0.35, 0.86]
Brand familiarity	.92	6.94	.040	[0.07, 2.48]

*attractive/Attractive*, and *Not interesting/Interesting* (Cronbach's alpha = .90;  $M = 4.17$ ,  $SD = 1.55$ ). We used the same 7-point semantic scale to measure message attitude. Both the scale for TV ad attitude (Cronbach's alpha = .92;  $M = 4.95$ ,  $SD = 1.42$ ) and attitude toward the banner (Cronbach's alpha = .89;  $M = 3.61$ ,  $SD = 1.46$ ) were reliable. Message attitude was asked only in the conditions in which the participants were exposed to the message. We measured purchase intention with four items (Tariq, Nawaz, Nawaz, and Butt 2013) on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). An example of an item is "I would like to buy SodaStream" (Cronbach's alpha = .90;  $M = 2.87$ ,  $SD = 1.46$ ).

### Mediators

*Recognition.* In advertising literature, recognition is often measured with an explicit recognition task. While advertising effects are traditionally assessed through explicit measures, these tools may be inadequate to measure effects caused by superficial or automatic information processing (e.g., Vandeberg et al. 2015). An implicit measure of recognition is necessary to provide a more complete understanding of the mechanisms that underlie multiscreening processing and effects. Therefore, we choose to measure implicit recognition with the perceptual identification task (Fang, Singh, and Ahluwalia 2007). Because this is a relatively new way to measure recognition implicitly, we also measured recognition in the traditional, explicit way as a proxy. Both measures are described here.

In the perceptual identification task the participants were exposed to a brand logo masked with noise. The noise decreased every second, and in 15 frames the brand became completely visible. The participants were asked to press a key as soon as they recognized the brand. The response time of the participants was recorded. Their response time was used in the analyses for implicit recognition. Thus, the faster their response (in seconds), the easier it was to recognize the brand. When they pressed the key, the picture immediately disappeared and was replaced by a screen where the participants had to indicate the brand depicted. In addition, they had to fill out the brand name to check for accuracy. Nine participants were excluded from the analyses of implicit recognition because of technical issues ( $n = 3$ ) or inaccuracy ( $n = 3$ ), or because they were identified as outliers ( $n = 3$ ) according to the outlier labeling rule (Hoaglin and Iglewicz 1987). The task included the target brand and filler brands. The filler brands consisted of four filler brands from the TV content and four new brands. The participants first completed a practice trial before they began the actual task.

Explicit recognition was measured by providing a list of brand names that included the target brand, seven filler brands from the same product category, and an "I have not seen one of these brands" option, in a random order. The filler brands

consisted of a combination of existing brands sold in the Netherlands and Belgium, and fictional soda brands that sounded similar to the target brand or described what was displayed in the advertisement. The participants answered whether they had seen one of the listed brands during media usage (Voorveld 2011). We assigned a score of 1 when a participant remembered the brand correctly and a score of 0 when he or she chose one of the other answer options (45.6% correct).

*Counterarguing.* Counterarguing was measured with an open-ended question, similar to the studies of Jeong and Hwang (2012, 2015). The respondents were asked to list arguments why they should not buy or use the target brand. Two independent coders counted the number of counterarguments ( $M = 1.55$ ,  $SD = 1.08$ ; range 0 to 6). The coders counted only the arguments to not buy/use the product (e.g., "I think that it is unhealthy"; "It looks expensive"; "I don't need a machine to make soda") and assigned arguments to buy/use the target brand (e.g., "I want to buy it because it looks useful") with a 0. Two coders counted all the responses separately, and intercoder reliability was very reliable (Krippendorff's alpha = .90).

*Enjoyment of media use.* We measured enjoyment of media use with five items on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*) of the interest-enjoyment subscale of the Intrinsic Motivation Scale (Ryan 1982). The interest-enjoyment subscale has recently been validated as measuring enjoyment (e.g., Tamborini, et al. 2011). Examples of items were "I enjoyed using the media in the living room very much" and "I would describe the use of media in the living room as very interesting." The scale appeared reliable in the current study (Cronbach's alpha = .89;  $M = 3.81$ ,  $SD = 1.22$ ).

### Control Variables

The control variables were gender, age, brand familiarity (Kent and Allen 1994; Cronbach's alpha = .92), tablet possession, tablet use, tablet skills, and the number of participants in the living room during exposure. Gender (Wald  $\chi^2(3) = 2.04$ ,  $p = .564$ ), age ( $F(3, 176) = 2.123$ ,  $p = .099$ ), brand familiarity ( $F(3, 176) = 2.655$ ,  $p = .050$ ), tablet possession (Wald  $\chi^2(3) = 0.187$ ,  $p = .980$ ), tablet use ( $F(3, 176) = 1.119$ ,  $p = .343$ ), and tablet skills ( $F(3, 176) = 1.015$ ,  $p = .388$ ) were equally divided among the conditions. However, the number of participants in the living room during exposure differed,  $F(3, 181) = 8.763$ ,  $p < .001$ . A post hoc Bonferroni showed that the multiscreening condition differed significantly from all other media conditions. Therefore, we included only the variable "number of participants in the living room" as a covariate in all analyses.

### Analysis

To test the hypotheses of the three proposed underlying mechanisms, separate PROCESS models were tested to

examine whether one or more of these mechanisms played a role in the effect of multiscreening on evaluative outcomes. PROCESS (Hayes 2013) uses an ordinary least squares or logistic regression based path analytical framework to estimate the direct and indirect effects in mediator models, including bootstrapping methods for inferences regarding indirect effects in mediation models. Other than the previously used method of Baron and Kenny (1986), it is possible to test an indirect effect without the assumption of a total effect. The current study used PROCESS with 1,000 bootstrap samples to estimate the bias-corrected bootstrap confidence intervals (BCBCIs). Because recognition was measured as a dichotomous variable, it is not possible to use this variable as a mediator in a PROCESS model (Hayes 2013). However, it is sufficient to test both paths separately, because this variable is used as a proxy for implicit recognition. We used a logistic regression to test the effect of multiscreening on recognition and analyses of covariance (ANCOVAs) to test the effect of recognition on the evaluative outcomes.

The dependent variable in all analyses was the evaluative outcome and the independent variable was multiscreening (1) versus single medium use (0). Single medium use consisted of SQT, ST TV, and ST tablet condition. These conditions did not significantly differ from one another on the Multitasking Perception Scale (Adler and Benbunan-Fich 2012). This scale consisted of four items measured on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). The items were “When I used media in the living room, (1) I switched between

two media, (2) I tried to use both media at the same time, (3) I used one medium at a time (reversed), (4) I was carrying out several media tasks at the same time” (Cronbach’s alpha = .87;  $M = 2.48$ ,  $SD = 1.69$ ). However, they all significantly differed from the multiscreening condition, Wald  $\chi^2(3) = 215.67$ ,  $p < .001$ .<sup>2</sup> An overview of all means of the evaluative outcomes and mediators is presented in Table 2.

## RESULTS

### Recognition as an Underlying Mechanism

The first hypothesis stated that recognition would be a mediator in the relationship between multiscreening and evaluative outcomes. The mediation model for brand attitude as the dependent variable showed the full mediation of multiscreening through implicit recognition (indirect effect =  $-.23$ ,  $SE = 0.10$ , 95% BCBCI [ $-0.48$ ,  $-0.08$ ]; direct effect =  $.04$ ,  $SE = 0.27$ ,  $p = .875$ , 95% BCBCI [ $-0.49$ ,  $0.57$ ]). As expected, the participants who were multiscreening had more difficulty with recognizing the brand ( $b = -1.89$ ,  $p < .001$ ), and this difficulty decreased brand attitude ( $b = .12$ ,  $p = .004$ ).

In addition, the results showed a full mediation effect for attitude toward the banner (indirect effect =  $-.23$ ,  $SE = 0.10$ , 95% BCBCI [ $-0.49$ ,  $-0.07$ ]; direct effect =  $.28$ ,  $SE = 0.27$ ,  $p = .310$ , 95% BCBCI [ $-0.26$ ,  $0.81$ ]). A similar model was found as observed for brand attitude. The participants who were multiscreening had more difficulty recognizing the brand

TABLE 2  
Scores on Evaluative Outcomes and Mediators by Media Condition

	Multiscreening	Single Medium Use		
	MS	SQT	ST TV	ST Tablet
<b>Dependent variables</b>				
Brand attitude	3.92 (1.47) <sup>a</sup>	4.42 (1.68) <sup>a</sup>	4.70 (1.49) <sup>a</sup>	3.66 (1.29) <sup>a</sup>
Attitude toward TV ad	4.84 (1.42) <sup>a</sup>	5.01 (1.38) <sup>a</sup>	5.07 (1.55) <sup>a</sup>	x <sub>a</sub>
Attitude toward banner	3.65 (1.38) <sup>a</sup>	3.69 (1.47) <sup>a</sup>	x <sub>a</sub>	3.42 (1.63) <sup>a</sup>
Purchase intention	2.63 (1.43) <sup>a</sup>	3.15 (1.59) <sup>a</sup>	2.90 (1.30) <sup>a</sup>	2.83 (1.41) <sup>a</sup>
<b>Mediators</b>				
<b>Recognition</b>				
Implicit <sub>b</sub>	13.05 (2.77) <sup>a</sup>	10.77 (2.72) <sup>b</sup>	10.87 (2.23) <sup>b</sup>	11.39 (3.00) <sup>ab</sup>
Explicit <sub>c</sub>	24% <sup>a</sup>	58% <sup>bc</sup>	73% <sup>b</sup>	40% <sup>ac</sup>
Counterarguing	1.22 (0.81) <sup>a</sup>	1.91 (1.35) <sup>b</sup>	1.67 (1.03) <sup>ab</sup>	1.40 (0.81) <sup>ab</sup>
Enjoyment	3.81 (1.08) <sup>a</sup>	3.78 (1.42) <sup>a</sup>	3.76 (1.30) <sup>a</sup>	3.92 (1.03) <sup>a</sup>
<i>n</i>	63	58	30	30

Notes. Cell entries are means with standard deviations in parentheses. Different superscripts indicate significant differences between means.

<sup>a</sup>Attitude toward TV ad was not asked in the ST Tablet condition; attitude toward banner was not asked in the ST TV condition.

<sup>b</sup>Some participants were excluded for the perceptual identification task to measure implicit recognition (see Methods section for the criteria). There were 58 participants in the MS condition and 115 in the single medium use condition.

<sup>c</sup>Brand recognition was measured as a dichotomous variable. The percentages are the results of a logistic regression and indicate the chance that a participant in that condition would recognize the brand.

( $b = -1.87, p < .001$ ), and this difficulty decreased banner attitude ( $b = .12, p = .005$ ).

No significant effects were found for attitude toward the TV ad (direct effect =  $-.04, SE = 0.28, p = .879$ , 95% BCBCI [-0.58, 0.50]; indirect effect =  $.04, SE = 0.11$ , 95% BCBCI [-0.15, 0.27]) or purchase intention (direct effect =  $-.20, SE = .27, p = .455$ , 95% BCBCI [-0.72, 0.32]; indirect effect =  $-.08, SE = .09$ , 95% BCBCI [-0.28, 0.07]). Thus, the first hypothesis can be accepted for brand attitude and attitude toward the banner (see Figure 1).

In addition to implicit recognition, we also conducted an analysis for explicit recognition. First, we tested the direct effect of multiscreening on explicit recognition. The logistic regression showed, as expected, a significant difference between multiscreening and single medium use for explicit recognition, Wald  $\chi^2(1) = 17.28, p < .001$ . The probability of recognizing the brand was significantly lower in the multiscreening condition (24%) than in the single medium use conditions (57%). Second, we tested the effect of recognition on the different evaluative outcomes. Similarly to the findings of implicit recognition, the ANCOVA showed that participants who recognized the brand had a more positive brand attitude ( $F(1, 180) = 18.54, p < .001$ ; recognized,  $M = 4.74, SD = 1.50$ ; not recognized,  $M = 3.68, SD = 1.42$ ) and banner ad attitude ( $F(1, 180) = 5.02, p = .028$ ; recognized,  $M = 3.99, SD = 1.53$ ; not recognized,  $M = 3.28, SD = 1.37$ ). In addition, the ANCOVA showed that participants who recognized the brand had a more positive purchase intention ( $F(1, 180) = 8.29, p = .004$ ; recognized,  $M = 3.25, SD = 1.56$ ; not recognized,  $M = 2.56, SD = 1.30$ ). Similar to the findings of implicit recognition, there was no significant effect of recognition on TV ad attitude ( $F(1, 180) = 0.27, p = .714$ ). The results of explicit recognition confirm the findings of implicit recognition. Based

on these analyses it can be concluded that multiscreening leads to a decrease in recognition and that recognition leads to more positive evaluations.

**Counterarguing as an Underlying Mechanism**

The second hypothesis stated that counterarguing serves as a mediator between multiscreening and evaluative outcomes. The mediation model with brand attitude as the dependent variable was examined ( $n = 181$ ). As expected, counterarguing functioned as a full mediator between multiscreening and brand attitude (indirect effect =  $.14, SE = 0.07$ , 95% BCBCI [0.03, 0.35]; direct effect =  $-.34, SE = 0.26, p = .187$ , 95% BCBCI [-0.85, 0.17]). Multiscreening decreased counterarguing ( $b = -.58, p = .001$ ), and a decrease in the number of counterarguments resulted in a more positive brand attitude ( $b = -.25, p = .022$ ).

The results showed a similar model for both attitude toward the TV ad and purchase intention (Figure 2). For both attitude toward the TV ad (indirect effect =  $.18, SE = 0.08$ , 95% BCBCI [0.06, 0.36]; direct effect =  $-.27, SE = 0.25, p = .293$ , 95% BCBCI [-0.77, 0.23]) and purchase intention

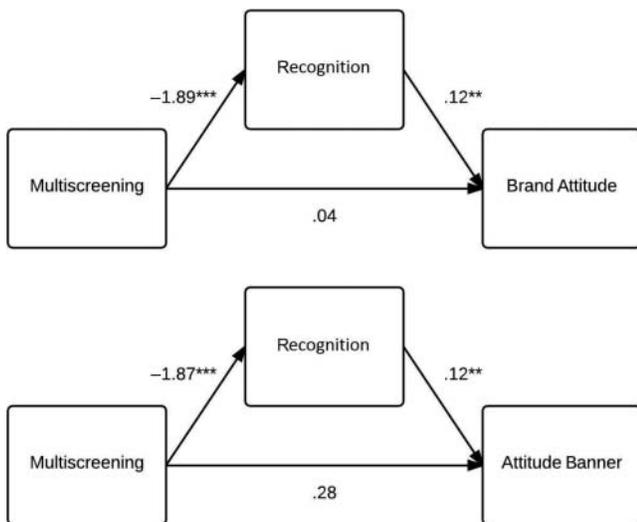


FIG. 1. Full mediation effect of multiscreening on brand attitude and attitude toward the banner through implicit recognition; \*\*\* $p < .001$ ; \*\* $p < .01$ .

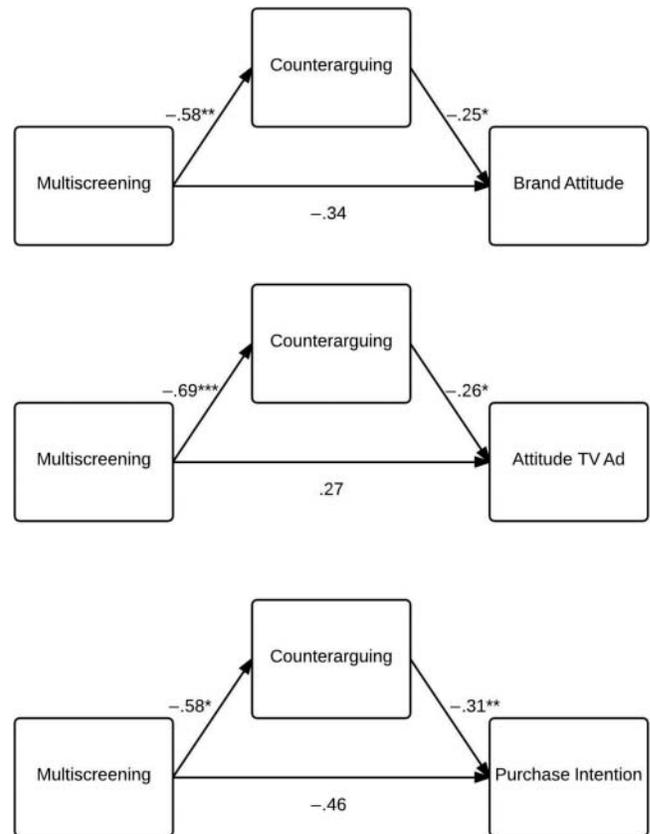


FIG. 2. Mediation of counterarguing on brand attitude, attitude toward the TV ad, and purchase intention. The model shows the unstandardized coefficients; \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .

(indirect effect = .18, SE = 0.07, 95% BCBCI [0.06, 0.34]; direct effect =  $-.46$ , SE = .24,  $p = .06$ , 95% BCBCI [ $-0.94$ , 0.02]), full mediation was observed. The mediation model for attitude toward the TV ad showed that multiscreening decreased the number of counterarguments ( $b = -.69$ ,  $p < .001$ ) and that a decrease in counterarguments resulted in a more positive attitude toward the TV ad ( $b = -.26$ ,  $p = .014$ ). Also, for the dependent variable, purchase intention led multiscreening to a decrease in counterarguments ( $b = -.58$ ,  $p = .001$ ), and this resulted in an increase in purchase intention ( $b = -.31$ ,  $p = .002$ ). The mediation model showed no significant effect for attitude toward the banner ad (indirect effect = .09, SE = 0.07, 95% BCBCI [ $-0.02$ , 0.27]; direct effect =  $-.02$ , SE = 0.26,  $p = .94$ , 95% BCBCI [ $-0.54$ , 0.50]). In sum, the second hypothesis is supported for brand attitude, attitude toward the TV ad, and purchase intention.

### Enjoyment as an Underlying Mechanism

The third hypothesis stated that the enjoyment of media use is another possible mediator in the relationship between multiscreening and evaluative outcomes. However, for all evaluative outcomes, the models showed no significant effects: brand attitude (direct effect =  $-.21$ , SE = 0.25,  $p = .392$ , 95% BCBCI [ $-0.70$ , 0.28]; indirect effect = .02, SE = 0.05, 95% BCBCI [ $-0.07$ , 0.15]), TV ad attitude (direct effect =  $-.12$ , SE = 0.23,  $p = .606$ , 95% BCBCI [ $-0.58$ , 0.34]; indirect effect = .03, SE = 0.08, 95% BCBCI [ $-0.12$ , 0.20]), banner attitude (direct effect = .05, SE = 0.24,  $p = .831$ , 95% BCBCI [ $-0.43$ , 0.53]; indirect effect = .02, SE = 0.08, 95% BCBCI [ $-0.12$ , 0.18]), and purchase intention (direct effect =  $-.30$ , SE = 0.24,  $p = .208$ , 95% BCBCI [ $-0.76$ , 0.17]; indirect effect = .02, SE = 0.06, 95% BCBCI [ $-0.07$ , 0.16]). Thus, the third hypothesis was rejected. Although there was no mediation, the relationships between enjoyment and brand attitude ( $b = .25$ ,  $p = .008$ ), attitude toward the TV ad ( $b = .40$ ,  $p < .001$ ), attitude toward the banner ( $b = .37$ ,  $p < .001$ ), and purchase intention ( $b = .27$ ,  $p = .003$ ) were significant.

### Counterarguing and Recognition as Underlying Mechanisms

The analyses showed that both counterarguing and recognition could be a mediator for brand attitude. Pearson's correlation coefficient shows that counterarguing and recognition are two distinct mechanisms ( $r = -.08$ ,  $p = .285$ ). However, the two mechanisms have opposite effects on brand attitude. Therefore, we tested both mechanisms in one model to examine which of these processes (i.e., counterarguing or implicit recognition) has the largest effect on brand attitude. The model showed a full mediation effect of both mediators (Figure 3). The direct effect of multiscreening on attitude was not significant (direct effect =  $-.10$ , SE = 0.27,  $p = .723$ , 95% BCBCI [ $-0.64$ , 0.44]). However, the mediation through

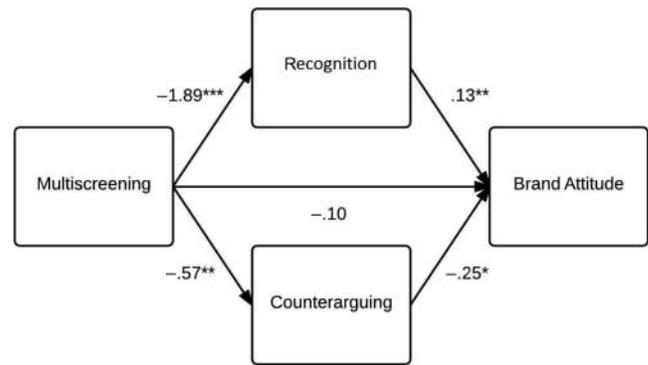


FIG. 3. Full mediation effect of multiscreening on brand attitude through implicit recognition and counterarguing; \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .

counterarguing (indirect effect = .14, SE = .07, 95% BCBCI [0.02, 0.33]) and the mediation through implicit recognition (indirect effect =  $-.24$ , SE = .11, 95% BCBCI [ $-0.48$ ,  $-0.07$ ]) were both significant, but in opposite directions. Recognition appeared to have the largest effect on brand attitude. The model explains 11.15% of the variance in brand attitude.

### DISCUSSION

The current study approximated a natural multiscreening environment by examining multiscreening using an actual TV and tablet. The results provide insights into advertising effects of a relatively new form of media multitasking: multiscreening. The aim of the study was to examine the underlying mechanisms of the effect of multiscreening on evaluative outcomes, such as brand attitude, message attitude, and purchase intention. The results provided an explanation for the effect of multiscreening on evaluative outcomes. First, recognition appeared to be an underlying mechanism of the effects of multiscreening on evaluative outcomes. When people were multiscreening, it was more difficult to recognize the brand afterward, and this difficulty resulted in more negative brand attitudes and attitudes toward the banner. Second, counterarguing also appeared to be an underlying mechanism of multiscreening on evaluative outcomes. As expected, multiscreening decreased the number of counterarguments; in turn, fewer counterarguments and thus less resistance resulted in more positive brand attitudes, attitudes toward the TV ad, and purchase intentions. When comparing the relative strength of both recognition and counterarguing, the former had the largest effect on brand attitude.

This study is the first to demonstrate that (implicit) recognition and counterarguing are underlying mechanisms of multiscreening on evaluative outcomes. However, these mechanisms might not always be present, depending on capacity and structural interference. We argue that the occurrence of either capacity or structural interference might explain which mechanism plays the most important role in a typical situation. On one hand, counterarguing entails thoughtful elaboration of

a message and is, therefore, impaired by the more limited cognitive capacities that people have while multiscreening. Capacity interference is present in all forms of media multitasking. Therefore, we argue that counterarguing would be a mechanism underlying the effects of all forms of media multitasking, not only multiscreening. On the other hand, recognition might be more closely related to structural interference. Difficulty recognizing an ad depends on how well the ad is encoded and stored. This process can be enhanced by attention to the ad. However, when multiscreening, attention is hindered because of the concurrent visual modalities of both screens. Therefore, we argue that difficulty in recognition occurs when there is structural interference, especially structural interference caused by concurrent visual modalities. Thus, difficulty of recognition might not have a negative effect on brand attitude while engaging in other forms of media multitasking in which no concurrent visual modalities are involved, such as reading a newspaper while the radio is on. In addition, this mechanism might not have a negative influence on the effect of multiscreening on brand attitude when more attention is directed toward the ad while multiscreening, for example, in case of advertising on both screens or when the attention of the viewer is directed to the screen with the ad. Additional research is needed to gain more insights into these underlying mechanisms, when they might occur, and how to counter them.

In addition to the underlying mechanisms of multiscreening observed, a third mechanism was proposed. It was expected that enjoyment would also be an underlying mechanism of multiscreening on evaluative outcomes. Although it was found that more positive evaluations occurred when people enjoyed using media more, there was no direct link between multiscreening and enjoyment. Thus, the idea of a carryover effect was supported, but no support was found for the popular assumption that enjoyment would increase as a result of multiscreening. This is not in line with previous findings in advertising research to media multitasking on enjoyment, where researchers found that multitasking would increase enjoyment (Chinchanachokchai, Duff, and Sar 2015). However, in another study, Oviedo et al. 2015 found a negative relation between multiscreening (combining TV episodes with Facebook) and enjoyment. Differences can be found in the type of multitasking and content, but also in the way enjoyment is measured. Future research should take a closer look at the effect of multiscreening on enjoyment.

### Limitations

One explanation for the findings in the current experiment might be the specific task. Normally, people might use the second media device to engage in the content on TV (Nielsen 2013; SKO 2013). Engagement can occur in different ways, such as providing information or creating an intrinsically enjoyable experience (Calder, Malthouse, and Schaedel 2009).

The task in the current experiment (i.e., TV guide) was designed to provide information. In addition, recently it was found that motives of multitasking differ depending on the type and goal of the task (Hwang, Kim, and Jeong 2014). Because the task on the tablet consisted of information searching, it was less likely that people would engage in this type of media multitasking for the purpose of enjoyment. That the experiment did not include a very “enjoyable” task could be regarded as a limitation of the current study.

Another limitation of the study is the answer to the following question: To what extent does the multiscreening behavior in the experimental study resemble multiscreening behavior in real-life situations? To increase ecological validity the room was designed like a living room and participants watched an actual TV and used a tablet, instead of multiscreening via a split screen on a computer monitor as was done in some other multiscreening studies (e.g., Chinchanachokchai, Duff, and Sar 2015; Van Cauwenberge, Schaap, and van Roy 2014; Wang et al. 2012). However, whether the respondents’ behavior (e.g., switching, viewing time) resembles real-life behavior is unknown. Empirical research is needed to assess how consumers behave while multiscreening, for example, by means of an observational study in consumers’ living rooms.

### Implications

The findings of the current study, especially regarding the two underlying mechanisms, have important implications for research on media effects. First, this is the first study that examined the three proposed mechanisms in a full mediation model. We thereby extend beyond work on direct effects of media multitasking and tap into the underlying processes explaining these effects. This is important for our understanding of media multitasking in general and multiscreening in specific. The current study adds two new underlying mechanisms to the model: counterarguing and recognition. This is a major contribution, because this is one of the first studies that directly tested both a cognitive (i.e., recognition) and attitudinal (i.e., counterarguing) mediator of multiscreening on advertising effects simultaneously (also see Jeong and Hwang in press).

A second important contribution is that the two underlying mechanisms had an opposite effect on evaluative outcomes: Counterarguing had a positive effect and recognition a negative effect on brand attitude. This finding has an important theoretical implication, because it could initially seem that multiscreening has no effect on evaluative outcomes. However, the current study showed that two opposite mechanisms are present. Finally, a differential effect of the mechanisms on the evaluative outcomes was found. For attitudes toward the message and purchase intentions, only one mechanism appeared to play a role; and for brand attitude, both mechanisms played a role. Thus, it will be important in future

research to consider different mechanisms when examining different evaluative outcomes.

In addition to theoretical contributions, the study also has important methodological contributions. This study is one of the first media multitasking studies that measured recognition in an explicit and implicit manner. The use of implicit measures is important because in real-life situations consumer decisions are mostly not explicitly linked to brand advertisements. The results of the current study were similar for both measurements. This indicates that both measures can be useful to measure recognition in future advertising research. Purchase intention was the only evaluative outcome where a difference was found between explicit and implicit recognition. We found no effect of implicit recognition, but we did find an effect of explicit recognition. This is an indication that the effect of recognition on purchase intention may involve a more conscious process (Vandeberg et al. 2015). However, it may also be an effect of the measurement itself. Further research that includes both implicit and explicit measures is necessary to get a better understanding of measuring recognition in a media multitasking and advertising context.

Second, the design of the current study has another important methodological contribution. In previous multitasking research the multitasking condition is often compared to only one single-tasking condition (i.e., one of the two tasks involved in the multitasking condition), and successful multitasking is often defined as no decrease in performance in the multitasking condition compared to this single-tasking condition (Jeong and Hwang in press; Lang and Chzran 2015). Therefore, choosing the right single tasking condition is considered to be an important decision in the research design. The current study, however, made use of different control conditions (i.e., single-tasking TV, single-tasking tablet, and sequential tasking) and found no differences among these control conditions. This finding suggests that the effects of multitasking may not always differ significantly by type of control group. Future research could further examine the different types of single-tasking (control) groups.

Finally, the results of the study provide important practical implications. Especially with the increasing population that engages in multiscreening, this phenomenon is of great concern to advertisers. The current study found that multiscreening led to both negative and positive effects on evaluation.

The negative effect on evaluation was mediated by a decrease in recognition. This indicates that multiscreening hinders the encoding and/or storing process, which leads to a decrease in ease of recognition and, therefore, a decrease in evaluation. This is undesirable for advertisers who spent a lot of their advertising budget on advertisements that are not recognized afterward. To negate this effect and to make advertising more effective, advertisers could enhance the encoding/storing process. One way to enhance the

process is by creating advertisements that are novel or unexpected, or by making a change in the environment (Lang 2000). These characteristics of a message will elicit an orienting response and consumers will pay better attention to the advertisement. Of course, eliciting orienting responses is also important when people are not engaging in multiscreening; but it is even more important in the current environment in which people are increasingly using multiple screens at the same time. Also when consumers are media multitasking, it can be an advantage when the primary focus of attention is directed toward the message (Jeong and Hwang 2012). Thus, an advertisement that is novel or unexpected, or has a change in environment, might elicit an orienting response, which enhances the encoding processes and could eventually lead to a positive effect on the evaluation of the brand and the message through recognition.

In addition, the positive effect on evaluation was caused by a decrease in resistance. Because consumers have to allocate cognitive capacities to multiple tasks, they are left with less cognitive capacities to resist persuasive messages. Thus, encouraging multiscreening behavior—for example, by developing an application related to the TV content—can give an advantage to advertisers when the aim is to improve brand evaluation for a brand shown on TV. In addition, apps related to TV content might elicit enjoyment, which would also benefit the evaluation of the brand and message.

Because this is one of the first studies into multiscreening and advertising, additional research is needed to explore this phenomenon further. Research in the field of media multitasking is often focused on decrements in performance. It would be interesting for advertisers to examine whether there are any mediators or moderators that could facilitate memory or evaluative outcomes, as this is often the goal of a campaign. The current study found two opposite, underlying mechanisms for the effect of multiscreening on brand attitude. This finding indicates that some factors can indeed hinder outcomes, but there are also factors that can facilitate evaluative outcomes.

## NOTES

1. The SQT condition was initially inserted to control for cross-media effects. For half of the participants in the MS and SQT group, a banner for the same product as advertised on the TV and for the other half an unrelated banner was shown on the tablet. However, these banners had no effect on the dependent variables. Only for counterarguing was a difference observed between the two banners in the multiscreening condition. However, when we controlled for the different banners, the effects remained the same. Thus, these conditions were taken together as a general MS and SQT condition.
2. The three single medium use conditions did also not significantly differ from one another on all evaluative outcomes and mediators.

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