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How Related Multiscreening Could Positively Affect Advertising Outcomes

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The use of multiple screens, also known as multiscreening, is assumed to have detrimental consequences for advertising outcomes. However, many people are engaging in this form of media multitasking on a daily basis. Therefore, it is important to focus on how to improve the effectiveness of advertisements when multiscreening. The aim of this study is to examine a key facilitator of advertising effects when multiscreening, namely task relevance. In two separate experiments—an online study (n = 280) and a laboratory (n = 185) study—we showed that people who engage in related multiscreening have better brand memory and more positive brand attitudes than people who engage in unrelated multiscreening via attention and subsequent program involvement. The results of the current study contribute to our understanding of multiscreening and advertising effects by showing that multiscreening does not always have to be detrimental to advertising effects. Furthermore, this study is unique because it combines two methodological approaches of multiscreening research.

Recent research has shown that the use of multiple screens simultaneously, also known as multiscreening, has negative consequences for advertising outcomes. In particular, studies that examined cognitive outcomes consistently showed detrimental effects of multiscreening, for example, on brand and ad memory (e.g., Angell et al. 2016; Kazakova et al. 2016). An explanation for this effect is the limited cognitive capacity that individuals must divide between the different screens (Lang 2000, 2006). Despite these negative consequences, industry research continually shows that a large proportion of society engages in some sort of multiscreening (Deloitte Development 2015; eMarketer 2016; Nielsen 2013). The industry even indicated multiscreening as one of its biggest challenges (Tiltman 2013). Therefore, it is important to focus on possibilities for improving information processing and advertising effects when multiscreening. A solution offered by the industry is to encourage social opportunities when watching television by integrating or evoking related social media behavior (Talbert 2014). The current study contributes to the knowledge of related multiscreening as a possible facilitator of advertising effects when multiscreening.

Multiscreening is extremely suitable for combining related tasks (Segijn 2016); the (interactive) nature of the screens involved in multiscreening makes it relatively easy to combine screens. It is argued that multiscreening with two related tasks is less cognitively demanding than multiscreening with two tasks that are not related; the former may, therefore, be less detrimental to cognitive effects (Wang et al. 2015). Indeed, a recent meta-analysis showed that the negative effects of multitasking on cognitive outcomes were greater when the tasks were unrelated (Jeong and Hwang 2016). However, most research that directly manipulated relatedness has found no direct differences between related and unrelated multiscreening (Study 1 of Kazakova et al. 2016; Van Cauwenberge, Schaap, and van Roy 2014). Because of the difference in results between the meta-analysis and the experiments in which relatedness was manipulated, scholars have called for more research looking at the role of relatedness (Jeong and Hwang 2016). The aim of the current study is to test the effect of related/unrelated multiscreening on brand memory and brand

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attitude. More specifically, we will take a closer look at this process by examining the underlying mechanisms of this effect. We argue that the effect of related multiscreening on advertising outcomes is mediated by attention toward the television show and subsequently program involvement.

By examining this relation, the current study contributes to our theoretical understanding of multiscreening effects, task relevance, and the underlying mechanisms of multiscreening effects. In addition, the results will benefit advertisers by providing insight into whether to stimulate related multiscreening activities. Finally, this study is innovative because it makes use of two different methodological approaches used in multiscreening research. The first methodological approach examines multiscreening on a split screen with computer tasks (Chinchanachokchai, Duff, and Sar 2015; Duff and Sar 2015; Van Cauwenberge, Schaap, and van Roy 2014; Wang et al. 2012). The second methodological approach examines multiscreening with separate tasks on multiple screens (Kazakova et al. 2016; Segijn, Voorveld, and Smit 2016). The current study is the first multiscreening study that combines both methodological approaches. Combining these approaches is considered critically important because both types of multiscreening exist in real life. However, it is not known how the different approaches could influence multiscreening effects and whether the results are complementary.

THEORETICAL BACKGROUND

The Multilayered Concept of Relatedness

It is a popular assumption that related multiscreening would result in better message processing and advertising effects than unrelated multiscreening. However, what is meant by related multiscreening? In the literature, different concepts are used to indicate some sort of relatedness, namely task relevance, congruency, congruity, redundancy, and repetition. These concepts indicate relatedness on slightly different levels and could therefore have different consequences for multiscreening effects. To organize these different concepts, we suggest a typology of the different levels of relatedness from general to specific. We argue that these different concepts are not mutually exclusive and could coincide or overlap. We illustrate this idea by means of the following example: Someone is watching the television show *The Voice* (task 1), and this person is using social media (e.g., Facebook or Twitter) on a tablet (task 2) simultaneously. Advertisements are shown on both screens. In this case, there could be relatedness on at least three different levels: (1) the tasks could be related to each other; (2) the advertisement could have a fit with one of the two tasks; and (3) the messages (e.g., advertisements) on the screens could be the same versus different on both screens. See Table 1 for an example to illustrate the multilayered concept of relatedness.

First, the goals of the messages on the screens might be related (e.g., watching *The Voice* on a television screen while reading posts on the Facebook page of *The Voice* on a tablet). This is also known as *task relevance* and is considered the first, and most general, level of relatedness. Task relevance is defined as "whether the tasks involved in media multitasking serve closely related goals (or a single overarching goal)" (Wang et al. 2015, p. 109). The focus is on the goals of the different tasks. Thus, for example, the tasks are considered relevant when people are watching *The Voice* and simultaneously using social media to chat, read, and/or post about the content of the television show. In this case, it is considered not relevant when someone is using social media during the television show to chat, read, and/or post about content other than the television show.

Second, the advertisement shown on the screen could be related to its context (e.g., when in the television show *The Voice*, a headphone brand is advertised). This idea is often called *congruency* or *congruity* and is the second level of relatedness. Congruency is defined as "the degree to which two stimuli match or fit together" (Garretson and Niedrich 2004, p.

TABLE 1
Example to Illustrate the Multilayered Concept of Relatedness

Multiscreening				Levels of Relatedness		
Screen A[a]	Screen B[a]	Brand	Ad Placement	Task Relevance	Congruency	Repetition
The Voice	*The Voice*	Beats by Dre headphones	Both screens	+	+	+
The Voice	*The Voice*	Beats by Dre headphones	One screen	+	+	−
The Voice	*The Voice*	CheapTickets	Both screens	+	−	+
The Voice	*The Voice*	CheapTickets	One screen	+	−	−
The Voice	Other	Beats by Dre headphones	Both screens	−	+	+
The Voice	Other	Beats by Dre headphones	One screen	−	+	−
The Voice	Other	CheapTickets	Both screens	−	−	+
The Voice	Other	CheapTickets	One screen	−	−	−

[a]In this example, screen A could involve a television screen on which the television show *The Voice* is broadcast and Screen B a tablet on which people use social media to engage about either the television content or other content.

27). This concept is also used in fields other than multitasking, indicating relatedness of a message within its context, for instance, product placement and its plot connection (Russell 2002), the product of an advertisement in a magazine genre (Moorman, Neijens, and Smit 2002), or brands in (adver) games (e.g., Lee and Faber 2007; Peters and Leshner 2013). In our multiscreening example, the brand advertised on one of the screens can be congruent (e.g., Beats by Dre headphones) with *The Voice* when the product fits the television show or incongruent (e.g., CheapTickets) when it does not fit the television show.

Third, the messages on the screens could be the same versus different on both screens (e.g., when on the television and on social media, an ad appears of the same brand). This level of relatedness is also known as *repetition* or *redundancy* and is the third and most specific level of relatedness. Repetition involves simply repeating (part of) a message. This is, for example, the case with cross-media advertising when a similar message is communicated through different media (Chang and Thorson 2004; Neijens and Voorveld 2015; Voorveld and Valkenburg 2015). In our multiscreening example, the messages are related on this level when both the television show and an ad on social media displayed on the tablet are sponsored by the same brand (i.e., Beats by Dre and Beats by Dre, or CheapTickets and CheapTickets, but not Beats by Dre and CheapTickets).

In the current study, we focus on the first level of relatedness—task relevance—and how this affects advertising outcomes. This level is particularly relevant in the multiscreening literature because it involves tasks carried out on different media devices simultaneously. Following the definition of Wang et al. (2015), we operationalize task relevance as two messages that serve an overarching or closely related goal on the same topic.

Task Relevance and Cognitive Capacities

It is argued that multiscreening could decrease consumer memory of advertising messages compared to single screening. This assumption is mainly based on the limited capacity model of motivated mediated message processing (LC4MP; Lang 2006). This theory states that people process information by perceiving it, turning it into mental representations, storing these mental representations in their memories, and retrieving them from their memories (Lang 2000, 2006). Cognitive resources are necessary to process, for example, advertising messages and to store, recall, and recognize the messages/brands from these messages afterward. However, the cognitive resources available to people to process these messages are limited (Lang 2000). When watching television, people can use cognitive resources to process the messages on television. However, when multiscreening, people must divide their cognitive resources between the messages on the different screens. Because people have a limited amount of these cognitive resources, this division of cognitive resources comes at the expense of processing the messages on both screens.

Combining tasks that are relevant to each other is argued to be less cognitively demanding than combining two tasks that are not relevant to each other (Wang et al. 2015). Thus, watching a television show and chatting about this show on a tablet is supposed to be less cognitively demanding than watching a television show and chatting about different topics simultaneously. This assumption is based on the theory of threaded cognition (Salvucci and Taatgen, 2008). This theory states that people have different cognitive threads. Each thread serves a different goal. Having multiple goals at the same time may increase cognitive demands as multiple threads compete for resources. However, when one has multiple tasks with a similar goal (i.e., chatting about the television show), the threads do not have to compete for cognitive resources. As a result, tasks with the same goal will be more efficiently processed, requiring fewer resources and resulting in better memory of the media content, than tasks that serve different goals. Therefore, task relevance could be seen as a facilitating factor of advertising effects when multiscreening.

Task Relevance as a Facilitator of Advertising Effects

Recently, a meta-analysis showed that task relevance affects persuasion when media multitasking (Jeong and Hwang 2016). In this meta-analysis, 49 studies on media multitasking and its effects on cognitive (e.g., comprehension, recall, task performance) and affective (e.g., agreement, attitude, reduced counterarguing) outcomes were examined. Each of the studies was coded by the authors regarding whether the tasks in the study were relevant to each other. The results showed that the negative cognitive effects of multitasking were stronger when combining two unrelated tasks compared to two related tasks.

However, until now, most research that directly manipulated task relevance showed no difference between related and unrelated multitasking (Study 1 of Kazakova et al. 2016; Van Cauwenberge, Schaap, and van Roy 2014). These studies compared single tasking with related and unrelated multitasking. The results showed differences in comprehension, memory, and attitude between the single tasking and multitasking conditions; however, no differences between the two multitasking conditions were observed. Only one study found a difference between related and unrelated multiscreening (Angell et al. 2016). In this study, the authors examined tweeting or texting during a broadcast soccer match and how many brands shown on the billboards on the soccer field participants could remember. The tweets or texts varied in the extent to which they were (un)related to the soccer match. The authors compared four multiscreening groups: (1) sending related messages, (2) reading related messages, (3) sending unrelated messages, and (4)

TABLE 2
A Literature Overview of Multiscreening and Task Relevance

Aspect	Breakdown	Angell et al. (2016)	Kazakova et al. (2016), Study 1	Van Cauwenberge et al. (2014)
Multiscreening	Task 1	TV: Soccer match	TV: Travel program + commercials	Computer (left side): News item
	Task 2	Texting/tweeting (sending vs. reading)	Laptop: Website browsing	Computer (right side): Google search
	Task 3	—	—	Print: Questionnaire with five search questions
Study	Method	Survey	Lab experiment	Lab experiment
	Sample	General sample	Student sample	Student sample
	Conditions	2 × 2 sending vs. reading, related vs. unrelated (no single screening)	1 between factor: single screening, multiscreening related, multiscreening unrelated	1 between factor: single screening, multiscreening related, multiscreening unrelated
	Dependent variable	Recall Recognition	Brand recognition; Free brand recall; Attitude toward the block	Cognitive load; Factual recall; Comprehension
	Cognitive outcomes and results	+ Recall and recognition is higher when participants actively send related messages.	0 No difference between multiscreening conditions, only between multiscreening and single screening conditions.	0 Cognitive load, recall, comprehension: No difference between multiscreening conditions, only between single screening and multiscreening conditions.
	Affective outcomes		0 No difference between multiscreening conditions, only between multiscreening and single screening conditions.	
Task relations	Task hierarchy	Unknown	0 Equal attention	−1 News item secondary focus
	Task switch	+1 Participant had control over switching	+1 Participant had control over switching	+1 Participant had control over switching
	Shared modality	−1 TV ads: visual (banners); Messaging: visual	−1 TV: audiovisual; Laptop: visual	−1 TV: audiovisual; Search task: visual; Print: visual
	Task contiguity	−1 Separate screens	−1 Separate screens	+1 Split screen

[a]Dimensions and coding scheme are derived from Wang et al. (2015).

reading unrelated messages. Their results showed that the participants who sent the related messages recalled and recognized more brands than in all the other conditions. Thus, they did not find an effect of all the related conditions compared to all the unrelated conditions, and they did not include a single screening condition in their study. See Table 2 for a comparison of the three studies.

Because of the difference in results between the meta-analysis and the experiments in which relatedness was manipulated, it is important to take a further look at multiscreening, task relevance, and advertising effects. An explanation of the different results between the experiments might be found in a factor other than task relevance. Wang et al.'s (2015) article describes multiple factors that could influence multitasking effects. One of the key points in this article is interaction among the multiple factors. Thus, task relevance might interact with another factor on which the three studies differ. To examine this, the three studies mentioned were coded and compared on other factors (Table 2). Based on this coding, task hierarchy appeared the main difference among the three studies. Task hierarchy is about how attention is divided between tasks and about the priority of each task (Wang et al. 2015). In the study of Van Cauwenberge et al. (2014; no results in task relevance), the participants were tested on recall and comprehension of their secondary focus task. In Study 1 of Kazakova et al. (2016; no results of task relevance), the participants were instructed to pay equal attention to both tasks. Finally, in the study where positive relatedness effects were found, the participants could decide for themselves how to divide their attention, and it is unknown how attention was distributed (Angell et al. 2016). The differences indicate that attention might play a key role in relatedness effects. In the next section, we explain how attention could affect advertising effects when multiscreening with related versus unrelated tasks.

Attention and Program Involvement as Underlying Mechanisms

We argue that the effect of related versus unrelated multiscreening on advertising outcomes is mediated by attention and subsequently program involvement. Attention must be divided when engaging in multiple tasks (Jeong, Hwang, and Fishbein 2010; Salvucci and Taatgen 2011). How attention is divided is determined by two types of processes. First, bottom-up processes are guided by features of the media content (e.g., Pieters and Wedel 2004; Smit, Neijens, and Heath 2013). Thus, these processes are driven by external factors, such as noises, camera changes, and arousing content (Lang et al. 2007). Second, top-down processes are guided by personal factors (e.g., Eysenck and Keane 2005). These processes are driven by internal factors, such as goals. The latter may drive more focused goal-directed attention allocation in related multiscreening because both tasks are serving related goals rather than opposing ones. When a task is relevant to achieving a personal goal, then more attention will be allocated to this task. Task relevance may drive automatic selection to process the message in the encoding stage because the information is at that point relevant to the goals and needs of that individual (Lang 2000). For example, when a consumer is chatting about a television show, more attention might automatically be allocated to this show because this show is relevant to achieving this person's goals. However, when the same person is chatting about something else, the television show becomes less relevant and fewer cognitive resources will be devoted to encoding the content of the show. A study on conversations while coviewing a television show found that when the conversation was about the content or context of the television show, people's attention was focused on the show. However, when people had a conversation about other topics, this distracted them from the show (Ducheneaut et al. 2008). Attention to the television show was increased when people talked about related topics. In sum, task relevance could be seen as a factor that could drive attention allocation when multiscreening through top-down processes.

Attention to the television show might not directly influence advertising effects but could stimulate program involvement. In addition, program involvement has previously been associated with advertising effects (Krugman 1983; Moorman, Neijens, and Smit 2007; Tavassoli, Schultz, and Fitzsimons 1995). Program involvement is defined as "an active, motivated state, signifying interest and arousal induced by a television program" (Moorman, Neijens, and Smit 2007, p. 131). Program involvement is thought to lead to enhanced processing of the message (Krugman 1983), which will lead to better memory (e.g., Moorman, Neijens, and Smit 2007; Tavassoli, Schultz, and Fitzsimons 1995) and more positive attitudes (e.g., Krugman 1983; Tavassoli, Schultz, and Fitzsimons 1995). To this end, we formulate the following hypotheses:

H1: Compared to single screening, multiscreening leads to less brand memory and less favorable brand attitudes via less attention to the television content and subsequently lower program involvement.

H2: Compared to unrelated multiscreening, related multiscreening leads to better brand memory and more favorable brand attitudes via more attention to the television content and subsequently higher program involvement.

Testing the Conceptual Model by Two Methodological Approaches in Multiscreening Research

The conceptual model is presented in Figure 1. To test this model, we conduct two separate studies, each using a different methodological approach. Two methodological approaches of multiscreening research can be distinguished. The first

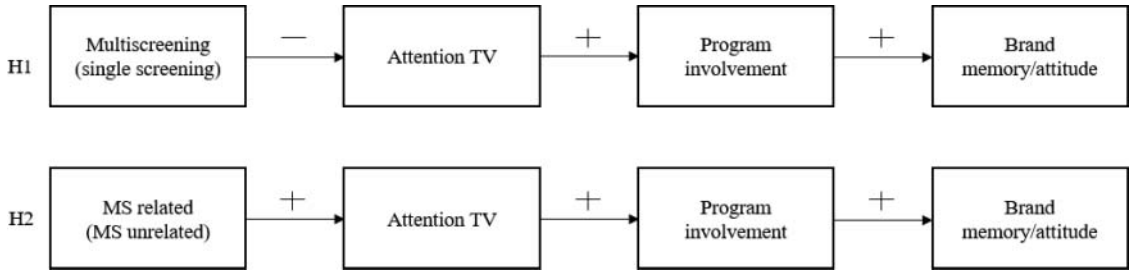

FIG. 1. Conceptual model.

methodological approach examines multiscreening on a split screen with computer tasks (Chinchanachokchai, Duff, and Sar 2015; Duff and Sar 2015; Van Cauwenberge, Schaap, and van Roy 2014; Wang et al. 2012). The second methodological approach examines multiscreening with separate tasks on multiple screens (Kazakova et al. 2016; Segijn, Voorveld, and Smit 2016). A key difference between the two methodological approaches is the task contiguity (e.g., physical distance between screens) when multiscreening. Presenting two tasks closely to each other (first methodological approach) may reduce switching time and cognitive research costs (Wang et al. 2015) compared to showing two tasks on separate screens (second methodological approach). Therefore, differences in the design could impact the effects. It is important to test the same conceptual model by both methodological approaches because both types of multiscreening exist in the multitasking literature and in real life. Moreover, it should be examined whether the different approaches could influence multiscreening effects and whether the results of the approaches are complementary. The current study is the first to test the same conceptual model by both methodological approaches.

STUDY 1

Method

Sample

The participants were recruited through an online panel of the ISO-certified research company PanelClix. Initially, 447 participants clicked on the link to participate. Of these participants, 22.6% ($n = 101$) did not complete the questionnaire. Furthermore, some participants were excluded because of technical reasons (e.g., could not play the television clip, no sound, or screen size too small; $n = 42$) or because they did not follow the instructions or did not take the questionnaire seriously (e.g., did not try to solve the anagrams, repeated response patterns; $n = 24$). The final sample consisted of 280 participants ($M_{age} = 29.13$, $SD_{age} = 6.68$, 52.9% female).[1] They received a financial reward from PanelClix for participation. The total duration of participation was 15 minutes, which included watching the television clip and filling out the questionnaire.

Design and Procedure

The experiment consisted of a single-factor, between-subjects design with four media conditions, namely, two multiscreening conditions and two single screening conditions. In all media conditions, participants watched a video and answered questions afterward. Multiscreening was manipulated by solving anagrams (Ie et al. 2012). These anagrams (Table 3) were presented below the video and consisted of words that were related to the video content (MS related, $n = 65$) or words that were unrelated to the video content (MS unrelated, $n = 59$). In the single screening conditions, the participants watched the video without any other task. The video was the same as that in the multiscreening conditions (SS full, $n = 76$). The fourth group was exposed to a different video without the target brand and functioned as the control condition (SS control, $n = 80$). The participants were randomly assigned to one of the four conditions. Before the start of the experiment, they first read and signed an informed consent form. Then, the participants watched the television clip. When the television clip was finished, they filled out a questionnaire with questions displayed in the following order: brand memory, brand attitude, program involvement, attention, manipulation check, and control variables.

Stimuli and Pretests

Television clip. The television clip consisted of an excerpt of an entertainment show. This entertainment show contained brand placement. To select an appropriate entertainment show, we selected four clips of entertainment shows that included brand placement. First, we conducted a pretest to test whether the different brands in the clips were appropriate for the study. In a pretest ($N = 32$, $M_{age} = 20.28$, $SD_{age} = 1.51$, 78.1% female), we tested familiarity, brand attitude, and brand commitment. We needed a relatively unfamiliar brand to which people had a neutral attitude and low brand commitment. One of the brands met all the criteria (Table 4). Second, we tested the brand saliency of the brand in the television clip when single screening in an additional pretest ($N = 33$, $M_{age} = 30.85$, $SD_{age} = 14.13$, 69.7% female). The clip

TABLE 3
Stimuli Words: Anagrams and Answers

Related Words			Unrelated Words		
Anagram	Word	Translation	Anagram	Word	Translation
ekorst	Orkest	Orchestra	rapeip	Papier	Paper
dinigret	Dirigent	Conductor	feetolon	Telefoon	Phone
Zemuik	Muziek	Music	ijrteg	Tijger	Tiger
ipona	Piano	Piano	nadega	Agenda	Calender
relpgijsd	Geldprijs	Cash prize	spohltict	Stoplicht	Traffic light
bupilek	Publiek	Audience	spakkot	Kapstok	Hallstand
croncentbegouw	Concertgebouw	Concert hall	hiuhuseoleijdk	Huishoudelijk	Domestic
petnun	Punten	Points	stalen	Lasten	Burden
turcuul	Cultuur	Culture	grinves	Vingers	Fingers
rujy	Jury	Jury	doak	Kado	Present
okro	Koor	Choir	orso	Roos	Rose
rposana	Sopraan	Soprano	tirpern	Printer	Printer
plaapus	Applaus	Applause	ptalisc	Plastic	Plastic
rnainaw	Winnaar	Winner	reanknt	Kranten	Newspaper

with the target brand was sufficiently salient. It had both brand recall and brand recognition of at least 50% when the participants paid full attention to the clip. The television clip had a duration of 9 minutes, 45 seconds and was an excerpt from the television show *Maestro*. This show featured a contest among celebrities who learn to conduct an orchestra. The program is sponsored by a lottery that supports culture.

Anagrams. We used anagrams to manipulate related versus unrelated multiscreening (Ie et al. 2012). In this way, it was possible to manipulate multiscreening in an online environment and to manipulate related versus unrelated multiscreening. To select words that were related to the clip, we asked five participants in a separate pretest to watch the target video and write down all the words that came to mind. We selected the 14 words (nouns and no [brand] names) that were mentioned by most participants. The unrelated anagrams were chosen based on the same numbers of syllables and letters as the related anagrams (Table 3).

Dependent Variables

Brand memory. Brand memory was calculated by a sum score of correct answers on four different memory questions ($M = 1.28$, $SD = 1.46$). First, we asked people to list all the brands they could remember from the clip. Second, we asked people if they could remember a brand in the product category of the brand. Third, we showed the participants a list of brands and asked if they could remember any of these brands from the clip. Finally, we showed a print screen of the clip where the brand was shown and asked them if they had seen this in the television clip. On every item, the participants scored 1 when they mentioned the correct brand and 0 when their answer was incorrect (Segijn, Voorveld, Vandeberg, and Smit 2017).[2]

Brand attitude. Brand attitude was asked about by six items on a 7-point semantic differential scale (Cronbach's alpha = .96, $M = 3.68$, $SD = 1.48$). The items were *Not useful/Useful, Not valuable/Valuable, Not interesting/Interesting, Bad/Good, Unpleasant/Pleasant, Unappealing/*

TABLE 4
Means and Standard Deviations of Brand Attitude, Familiarity, and Commitment

	Brand 1: Postcards	Brand 2: Grocery Store	Brand 3:* Lottery	Brand 4: Lottery
Brand attitude	4.73 (0.96)[a]	4.84 (0.90)[a]	3.58 (0.97)[b]	4.03 (1.11)[b]
Brand familiarity	4.00 (1.93)[b]	5.19 (1.53)[a]	2.90 (1.74)[c]	4.05 (1.67)[b]
Brand commitment	3.03 (1.58)[a]	2.98 (1.77)[a]	1.73 (0.99)[b]	2.70 (1.56)[a]

Note. All concepts were measured on a 7-point Likert scale (1 = lowest score, 7 = highest score). Different superscripts indicate significant differences between brands based on separate ANOVAs.

*This brand was chosen as the target brand based on the results of this pretest.

Appealing (Chang and Thorson 2004; Crites, Fabrigar, and Petty 1994).

Mediators

Attention. Attention was measured with two items by asking the participants how much attention they paid to the television clip ($M = 60.78$, $SD = 29.29$) and to the anagrams ($M = 76.86$, $SD = 19.11$) on a scale of 0 (*No attention*) to 100 (*Full attention*) (Jeong and Hwang 2012). Attention to the anagrams was only asked about in the two multiscreening conditions. Recently, Segijn, Voorveld, Vandeberg, and Smit (2017) showed that self-reported measure of attention is a valid measure in multiscreening conditions when the question is posed right after exposure.

Program involvement. Program involvement was measured by three items (Cronbach's alpha = .91, $M = 4.13$, $SD = 1.57$) on a 7-point scale (*1 = Totally disagree, 7 = Totally agree*). The items were "I found the TV clip fascinating"; "I was interested in the TV clip"; and "I watched the TV clip attentively" (Bryant and Comisky 1978; Moorman, Neijens, and Smit 2007; Norris and Colman 1993).

Manipulation Check

We measured the perceived relatedness of the anagrams to the television clip by showing the correct answers of the anagrams (Table 3) and asking the participants to what extent they thought these words were related to the clip (1 = *Totally unrelated*, 7 = *Totally related*; $M = 4.35$, $SD = 2.39$).

Control Variables

Finally, we did a randomization check by conducting an analysis of variance (ANOVA) for the media conditions and participant age and the screen size of the screen on which the questionnaire and the tasks were displayed. In addition, we conducted separate chi-square analyses for the media conditions and the other control variables. The results showed that participant age ($p = .611$), gender ($p = .623$), education ($p = .968$), prior television clip exposure ($p = .094$), prior television show exposure ($p = .111$), and prior knowledge of the product placement ($p = .938$), and screen size ($p = .425$) were equally divided among the different conditions. Therefore, we did not include these variables as covariates in the analyses.

Results

Manipulation Check

A one-way ANOVA was conducted to check whether the anagrams in the two multiscreening conditions were perceived by the participants to be related or unrelated to the television clip. As intended, the anagrams in the MS-related condition were significantly more perceived as related to the television clip ($M = 6.31$, $SD = 0.97$) than the anagrams in the MS-unrelated condition ($M = 2.20$, $SD = 1.44$), F (1, 122) = 350.37, $p < .001$.

Overview of Main Effects

All the means and standard deviations of the dependent variables and mediators are presented in Table 5. Table 5 shows the difference between no exposure to the brand (SS control) versus the different exposure groups (i.e., MS related, MS unrelated, SS full). The table shows that the four media groups differed significantly on brand memory, F (3, 276) = 32.39, $p < .001$, $\eta^2 = .26$. As expected, participants who were not exposed to the brand had less brand memory than the participants in all the other media conditions. In addition, the participant memory of the brand was the highest in the SS-full condition. No significant difference was found among the four media conditions on brand attitude, F (3, 276), 0.65, $p = .583$.

TABLE 5
Overview of Dependent Variables and Mediators per Condition (Study 1)

	Single Screening (Control)*	Multiscreening Related	Multiscreening Unrelated	Single Screening (Full)
Dependent variables				
Brand memory	0.19 (0.45)[c]	1.55 (1.48)[b]	1.34 (1.48)[b]	2.13 (1.45)[a]
Brand attitude	3.62 (1.43)[a]	3.57 (1.56)[a]	3.61 (1.62)[a]	3.88 (1.34)[a]
Mediators				
Attention television	79.61 (14.90)[a]	41.65 (26.90)[b]	32.76 (22.74)[b]	79.05 (17.01)[a]
Program involvement	4.75 (1.46)[a]	3.48 (1.38)[b]	3.34 (1.41)[b]	4.64 (1.48)[a]

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

*In the single screening control condition, participants watched a different video clip. These participants were asked about the same brand as in the other two conditions. However, attention to the clip and involvement with the clip was measured about other content.

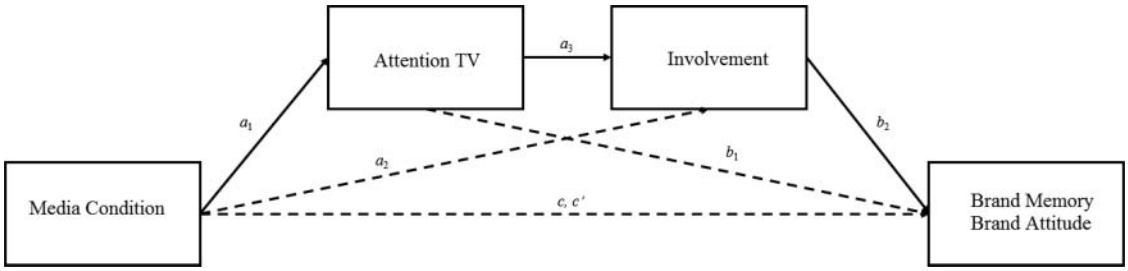

FIG. 2. Indirect effect of multiscreening on brand memory and brand attitude via attention to the television clip and subsequent program involvement.

Furthermore, a one-way ANOVA showed significant differences between the media conditions in terms of attention paid to the television clip, F (3, 279) = 98.61, $p < .001$, $\eta^2 = .52$. In both single screening conditions, the participants paid more attention to the television clip than the participants in the two multiscreening conditions (Table 5). The difference between the two multiscreening conditions was marginally significant ($p = .077$).[3] Finally, the results showed a significant difference in program involvement, F (3, 279) = 18.65, $p < .001$, $\eta^2 = .17$. The participants in both single screening conditions were more involved with the television clip than the participants in the multiscreening conditions. We will not include the SS control condition in any further analyses of hypotheses testing because we measured attention to/involvement with another clip in this condition.

Mediation Effects via Attention and Program Involvement

To test the mediation hypotheses, we used PROCESS Model 6 from Hayes (2013). The model is presented in Figure 2. We used dummy coding to test the hypotheses for the three media conditions involved (i.e., MS related, MS unrelated, and SS full). We created dummies for the MS-related (MS related = 1, otherwise = 0) and MS-unrelated groups (MS unrelated = 1, otherwise = 0) and used the SS-full condition as the reference group. First, we conducted the analyses for the MS-related condition and included the MS-unrelated dummy as a covariate. Second, we conducted the same analysis, but this time we used the MS-unrelated dummy as the independent variable and the MS-related dummy as the covariate. Finally, the same analysis with SS-full dummy as covariate was conducted to test the difference between related and unrelated multiscreening. The correlations of the variables are presented in Table 6. Variance inflation factor (VIF) diagnostics showed no multicollinearity issues (VIFs < 3.00).

TABLE 6
Correlation Matrix (Study 1)

	Memory	Attitude	Attention TV	Involvement
Memory	x	.10	.31***	.32***
Attitude		x	.18*	.33***
Attention TV			x	.67***
Involvement				x

Note. The correlations do not include the single screening control condition because participants were exposed to a different video.

***$p < .001$; **$p < .01$; *$p < .05$.

The hypothesis states that the difference between the related and unrelated multiscreening on brand memory and brand attitude could be due to differences in attention to the television clip and subsequently program involvement. The results of the separate PROCESS models showed significant indirect effects of media condition on brand memory and brand attitude (Table 7). Participants scored lower on brand memory in the MS-related (indirect effect = −.31, boot SE = .14, 95% BCBCI [−0.60, −0.04]) and MS-unrelated conditions (indirect effect = −.38, boot SE = .16, 95% BCBCI [−0.74, −0.09]) compared to participants in the single tasking condition. Even more noteworthy, the results of memory for the participants in the MS-related conditions were significantly higher than for the participants in the MS-unrelated condition (indirect effect = .07, boot SE = .05, 95% BCBCI [0.02, 0.21]). The analyses showed that related multiscreening results in more attention to the television clip ($b = 8.88$, $p = .028$) and that more attention to the television clip correlates to more involvement ($b = .04$, $p < .001$). Finally, the results showed that more involvement correlates to better brand memory ($b = .21$, $p = .018$).

Comparable results were found for brand attitude. Participants scored lower on brand attitude in the MS-related (indirect effect = −.55, boot SE = .14, 95% BCBCI [−0.87, −0.29]) and MS-unrelated conditions (indirect effect = −.68, boot SE = .16, 95% BCBCI [−1.02, −0.38]) compared to the participants in the single tasking condition. In addition, participants in the MS-related conditions scored significantly higher on brand attitude compared to participants in the MS-unrelated condition (indirect effect = .13, boot SE = .07, 95% BCBCI [0.01, 0.33]). The analyses again showed that related multiscreening results in more attention to the television clip ($b = 8.88$, $p = .028$) and that more attention to the television clip correlates to more involvement ($b = .04$, $p < .001$). Finally, more involvement

TABLE 7
Indirect Effect of Multiscreening (Related/Unrelated) on Brand Memory and Brand Attitude (Study 1)

Dependent Variable	Media Condition (Reference Group)	Indirect Effect (SE) [95% BCBCI]	a_1	a_2	a_3	b_1	b_2	c (Total)	c' (Direct)
Brand memory									
	MS related (SS)	−0.31 (0.14) [−0.60, −0.04]	−37.41 (3.77)***	0.29 (0.24)	0.04 (0.00)***	0.01 (0.01)	0.21 (0.09)*	−0.48 (0.19)*	−0.09 (0.30)
	MS unrelated (SS)	−0.38 (0.16) [−0.74, −0.09]	−46.29 (3.87)***	0.49 (0.26)	0.04 (0.00)***	0.01 (0.01)	0.21 (0.09)*	−0.57 (0,23)*	−0.22 (0.33)
	MS related (MS unrelated)	0.07 (0.05) [0.02, 0.21]	8.88 (4.01)*	−0.20 (0.21)	0.04 (0.00)***	0.01 (0.01)	0.21 (0.09)*	0.09 (0.08)	0.13 (0.26)
Brand attitude									
	MS related (SS)	−0.55 (0.14) [−0.87, −0.29]	−37.41 (3.77)***	0.29 (0.24)	0.04 (0.00)***	−0.00 (01)	0.38 (0.09)***	−0.29 (0.21)	−0.01 (0.30)
	MS unrelated (SS)	−0.68 (0.16) [−1.02, −0.38]	−46.29 (3.87)***	0.49 (0.26)	0.04 (0.00)***	−0.00 (01)	0.38 (0.09)***	−0.31 (0.24)	0.04 (0.33)
	MS related (MS unrelated)	0.13 (0.07) [0.01, 0.33]	8.88 (4.01)*	−0.20 (0.21)	0.04 (0.00)***	−0.00 (01)	0.38 (0.09)***	0.02 (0.10)	−0.05 (0.26)

Note. The table represents the unstandardized coefficients (with boot SE in parentheses). BCBCI = bias-corrected 1,000 bootstrap confidence interval. The coefficients correspond with the paths in Figure 2.

***$p < .001$; **$p < .01$; *$p < .05$.

is correlated to more positive brand attitude ($b = .38$, $p < .001$). Thus, the hypotheses were confirmed.

Discussion of Study 1

The results of the first study were in line with the hypotheses. Compared to single screening, multiscreening has a negative effect on attention to the television clip, which results in low levels of program involvement, worse brand memory, and more negative brand attitudes. More important, related multiscreening leads to better brand memory and more favorable brand attitudes via attention to the television clip and subsequently program involvement than unrelated multiscreening.

These results are a first step in testing task relevance as a possible facilitator of multiscreening effects between different multiscreening conditions. This study has three strengths. First, the chosen approach (e.g., split screen with computer tasks) connects the findings to the results of previous studies on multiscreening conducted with this methodological approach (Chinchanachokchai, Duff, and Sar 2015; Duff and Sar 2015; Van Cauwenberge, Schaap, and van Roy 2014). Second, it adds to the multiscreening theory by focusing on a possible facilitator of advertising effects. Third, it makes use of a general sample, which makes the results more externally valid.

However, this study has two limitations: task contiguity and user control. The first limitation, task contiguity, is about the physical distance between the two tasks. We chose to present the two tasks on a split-screen computer to be consistent with previous multiscreening research. As mentioned before, the physical distance between tasks could influence the effects because it may influence switching time and cognitive research costs (Wang et al. 2015). Second, user control was high because people could decide for themselves when to solve the anagrams and when to pay attention to the television clip. Consequently, it is not certain whether people were multiscreening during exposure to the brand. It is important to address these limitations because a meta-analysis showed that both task contiguity and user control could influence multitasking effects (Jeong and Hwang 2016).

Therefore, we conducted a second study to be more confident that the found effects were due to the difference between related and unrelated multiscreening and not to other factors. In Study 2, we addressed the limitation of task contiguity by using two tasks (i.e., watching a television clip and chatting) on two different screens. In addition, we addressed user control by sending chat messages through an automatic script to ensure that people were multiscreening during brand exposure. An accompanying benefit is that we tested the conceptual model in a more controlled environment to increase the internal validity of the findings. In addition, answering chat messages is more ecologically valid than solving anagrams.

STUDY 2

Method

Sample and Design

The sample of the laboratory experiment consisted of 185 undergraduates ($M_{age} = 22.22$, $SD_{age} = 3.93$, 82.7% female). They were recruited through the online subject pool of the university. The total duration of participation was approximately 15 to 20 minutes per participant. The participants were given five euros or one research credit for participating. We used a design with the three media conditions in which the participants were exposed to the same television clip to further disentangle the mediation effect of related/unrelated multiscreening on advertising outcomes. The participants were randomly allocated to one of the three conditions: MS-related ($n = 61$), MS-unrelated ($n = 63$), and single screening condition ($n = 61$).

Procedure

First, the participants read and signed an informed consent form, after which they received the instructions for the experiment. In all conditions the participants were asked to watch a video and answer questions about it afterward. The video was the same television clip as in Study 1. In the single screening condition, it was stressed that they could not do other things while watching the video. In the multiscreening conditions, they were asked to read and answer chat messages that would appear on the tablet while the video was playing. These chat messages were about either the content of the video (MS related) or other content (MS unrelated).

To become familiar with sending the chat messages, the participants were asked to send a specific number presented on their computer screen before the video started. This number corresponded with their participation number. After the researcher received their number, the participants were told they could continue to the video. They were reminded to read and answer the chat messages on the tablet when the video was playing. The first chat message when the video started was the same for all participants and sought to check whether they understood what was asked of them. This question was about the color of the jacket of a person in the video. After this question, the remaining nine chat messages were sent by a script that sent the messages automatically at intervals of 65 seconds. When the video was finished, the participants filled out a questionnaire that was similar to the one used in Study 1.

Pretest Chat Messages

The chat messages were pretested on their relatedness to the video ($n = 9$, $M_{age} = 25.56$, $SD_{age} = 2.60$, 77.8% female). We chose the 18 messages that had the highest and the lowest mean scores on the question "To what extent are these questions completely unrelated (1) or completely related (7) to the

video?" after the participants in the pretest were exposed to the video. Examples of related questions are "What do you think of the comments of the jury?" and "How do you think [person in video] is conducting the orchestra?" Examples of unrelated questions are "What is your favorite thing to do in your spare time?" and "What is your best talent?"

Variables

We measured brand memory ($M = 1.93$, $SD = 1.36$),[4] brand attitude (Cronbach's alpha = .92, $M = 3.40$, $SD = 1.16$), attention ($M = 71.12$, $SD = 19.60$), and program involvement (Cronbach's alpha = .87, $M = 4.86$, $SD = 1.34$), similar to the process in Study 1. We measured memory of the editorial content as an additional dependent variable by posing 10 multiple-choice questions about the content of the video (Oviedo et al. 2015). Each question had four answer options. We added this question to check whether the hypotheses hold not only for a specific element (such as a brand) but also for the general information in a television clip. On every item, the participants scored a 1 when they provided the correct answer and a 0 when their answer was incorrect. We calculated a sum score of the 10 items for each participant ($M = 7.94$, $SD = 1.75$).

Manipulation Check

We measured the perceived relatedness of the chat messages to the television clip by asking the participants to what extent they thought the chat messages they were asked to answer during the television clip were related to the television clip (1 = *Totally unrelated*, 7 = *Totally related;* $M = 3.60$, $SD = 2.35$).

Control Variables

Finally, we did a randomization check by conducting an ANOVA for the media conditions and participant age and separate chi-square analyses for the media conditions and the other variables. Participant age ($p = .092$), gender ($p = .494$), prior television clip exposure ($p = .244$), prior television show exposure ($p = .623$), and prior knowledge of the product placement ($p = .244$) were equally divided among the different conditions. Therefore, none of these variables was added as a control variable to the analyses.

Results

Manipulation Check

A one-way ANOVA was conducted to check whether the chat messages in the two multiscreening conditions were perceived as related or unrelated to the television clip. The results showed, as expected, a significant difference in the perceived relatedness of the chat messages to the television clip, F (1, 122) = 675.93, $p < .001$. The messages in the MS-related condition were perceived as more related ($M = 5.79$, $SD = 1.16$) than the messages in the MS-unrelated condition ($M = 1.48$, $SD = 0.62$). The manipulation was successful.

Overview of Main Effects

An overview of the means and standard deviations of all the dependent and mediator variables is presented in Table 8. Similar to Study 1, we found significant differences between the media conditions for brand memory, F (2, 184) = 7.22, $p = .001$, $\eta^2 = .07$. Again, the participants in the SS condition remembered more than the participants in the MS conditions, and no difference was found between the two MS conditions. Similar results were found for memory of the editorial content, F (2, 184) = 18.85, $p < .001$, $\eta^2 = .17$. The one-way ANOVA for brand attitude again yielded no significant differences between the media conditions, F (2, 184) = 1.83, $p = .163$.

A one-way ANOVA with attention to the television clip as dependent variable showed significant differences between the media conditions, F (2, 184) = 74.37, $p < .001$, $\eta^2 = .45$. A

TABLE 8
Overview of Dependent Variables and Mediators per Condition (Study 2)

		Single Screening	Multiscreening Related	Multiscreening Unrelated
Dependent variables				
	Brand memory	2.39 (1.27)[a]	1.49 (1.39)[b]	1.90 (1.28)[ab]
	Brand attitude	3.57 (1.33)[a]	3.18 (1.09)[a]	3.46 (1.02)[a]
	Memory of editorial content	8.93 (1.17)[a]	7.66 (1.62)[b]	7.24 (1.91)[b]
Mediators				
	Attention television	89.79 (10.11)[a]	62.74 (16.11)[b]	61.16 (16.65)[b]
	Program involvement	5.42 (1.31)[a]	4.76 (1.19)[b]	4.43 (1.35)[b]

Note. Cell entries are means with standard deviations in parentheses. Different superscripts indicate significant differences between means. No control variables were added to these analyses.

TABLE 9
Correlation Matrix (Study 2)

	$Memory_{ad}$	$Memory_{ed}$	Attitude	Attention TV	Involvement
$Memory_{ad}$	x	$.30^{***}$	.00	$.25^{**}$	$.26^{***}$
$Memory_{ed}$		x	.11	$.51^{***}$	$.41^{***}$
Attitude			x	.05	$.14^{\dagger}$
Attention TV				x	$.57^{***}$
Involvement					x

$^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$; $\dagger p < .10$.

post hoc Bonferroni test showed that the participants in the SS condition paid significantly more attention to the television clip ($M = 89.79$, $SD = 10.11$) than participants in the MS-related ($M = 62.74$, $SD = 61.16$, $p < .001$) and the MS-unrelated condition ($M = 61.16$, $SD = 16.65$, $p < .001$). Contrary to expectations, the multiscreening conditions showed no significant differences in the amount of attention to the television clip.

However, in the MS-related condition, the participants sent significantly longer chat messages ($M_{words} = 49.42$, $SD_{words} = 23.30$) than in the MS-unrelated condition ($M_{words} = 26.30$, $SD_{words} = 19.18$), F (1, 121) = 36.00, $p < .001$. In addition, the number of words sent had a negative effect on attention to the television clip, F (1, 121) = 7.67, $p = .007$, $b^* = -.25$. Therefore, we also compared attention to the television clip between the two multiscreening conditions controlling for the number of words sent in the chat messages. The analysis of covariance (ANCOVA) showed that the participants in the MS-related condition paid significantly more attention to the television than the participants in the MS-unrelated condition when controlling for the number of words sent, F (1, 121) = 4.33, $p = .040$, $\eta^2 = .04$. In addition, there was no significant difference between the two multiscreening conditions in the amount of attention to the chat messages, F (1, 121) = 3.07, $p = .082$.

Mediation Effects via Attention and Program Involvement

Similar to Study 1, we tested whether related multiscreening results in more attention to the television clip, which results in more involvement with the television clip and results in higher brand memory and more positive brand attitudes compared to unrelated multiscreening. The same PROCESS model as in Study 1 was conducted (Figure 2). In all the models, we controlled for number of words sent in the chat messages.[5] The correlation matrix is presented in Table 9. VIF diagnostics showed no multicollinearity issues (VIFs < 2.50).

Again, the results of the models showed significant indirect effects of related multiscreening on brand memory and brand attitude (Table 10). Compared to SS, the results showed lower brand memory in the related multiscreening condition (indirect effect = −.16, boot SE = .07, 95% BCBCI [−.33, −.04]) and unrelated multiscreening condition (indirect effect = −.22, boot SE = .10, 95% BCBCI [−.44, .06]). Even more noteworthy, participants in the MS-related condition showed higher brand memory than did participants in the MS-unrelated condition (indirect effect = .06, boot SE = .04, 95% BCBCI [.01, .17]).

In addition, for brand attitude the results showed lower brand attitudes for participants in the MS-related (indirect effect = −.13, boot SE = .08, 95% BCBCI [−.23, −.02]) and MS-unrelated conditions (indirect effect = −.18, boot SE = .11, 95% BCBCI [−.44, −.00]) compared to the SS condition. Again, more positive brand attitudes were observed for participants in the MS-related condition compared to the MS-unrelated condition (indirect effect = .05, boot SE = .04, 95% BCBCI [.00, .17]).

As expected, related multiscreening resulted in more attention to the television clip ($b = 6.41$, $p = .024$), and more attention to the television clip led to more involvement ($b = .05$, $p < .001$). Finally, more involvement led to better brand memory ($b = .21$, $p = .019$) and more positive brand attitude ($b = .17$, $p = .025$). In addition, we tested the same model for memory of the editorial content. A similar pattern was observed for this dependent variable (Table 10); more involvement resulted in an increase in participant memory of the editorial content ($b = .25$, $p = .012$). Thus, the hypotheses were again confirmed.

Discussion of Study 2

In Study 2, we replicated the findings of Study 1 in a different multiscreening setting. In addition, we addressed the limitations of Study 1 by presenting two tasks on separate screens and by using an automatic script to ensure that the participants were multiscreening during brand exposure. The results of Study 2 were in line with the hypotheses. The results showed that participants in the multiscreening conditions had worse brand memory, worse memory of the editorial content, and less positive brand attitudes via attention and subsequently program involvement compared to participants in the single screening conditions. Furthermore, we found that participants in the related multiscreening conditions had better brand memory, better memory of the editorial content, and more positive

TABLE 10
Indirect Effect of Multiscreening on Brand Memory, Brand Attitude, and Memory of Editorial Content (Study 2)

Dependent Variable	Media Condition (Reference Group)	Indirect Effect (SE) [95% BCBCI]	a_1	a_2	a_3	b_1	b_2	c (Total)	c' (Direct)
Brand memory									
	MS related (SS)	−.16 (.07)	−16.31	0.54	0.05	0.00	0.21	−.07	−0.54
		[−.33, −.04]	(3.77)***	(0.31)	(0.01)***	(0.01)	(0.09)*	(0.16)	(0.37)
	MS unrelated (SS)	−.22 (.10)	−22.72	0.31	0.05	0.00	0.21	−.18	−0.15
		[−.44, −.06]	(2.95)***	(0.27)	(0.01)***	(0.01)	(0.09)*	(0.18)	(0.31)
	MS related	.06 (.04)	6.41	0.22	0.05	0.00	0.21	.12	−0.40
	(MS unrelated)	[.01, .17]	(2.82)*	(0.22)	(0.01)***	(0.01)	(0.09)*	(.09)	(0.26)
Brand attitude									
	MS related (SS)	−.13 (0.08)	−16.31	0.54	0.05	−0.01	0.17	.15	−0.28
		[−.23, −.02]	(3.77)***	(0.31)	(0.01)***	(0.01)	(0.08)*	(0.14)	(0.32)
	MS unrelated (SS)	−.18 (0.11)	−22.72	0.31	0.05	−0.01	0.17	.13	−0.09
		[−.44, −.00]	(2.95)***	(0.27)	(0.01)***	(0.01)	(0.08)*	(0.17)	(0.28)
	MS related	.05 (.04)	6.41	0.22	0.05	−0.01	0.17	.02	−0.19
	(MS unrelated)	[.00, .17]	(2.82)*	(0.22)	(0.01)***	(0.01)	(0.08)*	(.07)	(0.23)
Memory of editorial content									
	MS related (SS)	−.19 (0.10)	−16.31	0.54	0.05	.03	0.25	−.46	−0.13
		[−.45, −.05]	(3.77)***	(0.31)	(0.01)***	(0.01)**	(0.10)*	(0.22)*	(0.42)
	MS unrelated (SS)	−.27 (0.12)	−22.72	0.31	0.05	.03	0.25	−0.75	−0.57
		[−.56, −.06]	(2.95)***	(0.27)	(0.01)***	(0.01)**	(0.10)*	(0.24)*	(0.36)
	MS related	.07 (0.05)	6.41	0.22	0.05	.03	0.25	.29	.44
	(MS unrelated)	[.01, .21]	(2.82)*	(0.22)	(0.01)***	(0.01)**	(0.10)*	(.13)*	(.30)

Note. The table represents the unstandardized coefficients (with boot SE in parentheses). BCBCI = bias-corrected 1,000 bootstrap confidence interval. The coefficients correspond with the paths in Figure 2.

***$p < .001$; **$p < .01$; *$p < .05$.

brand attitudes compared to participants in the unrelated multiscreening condition via attention and subsequent program involvement.

GENERAL DISCUSSION

The aim of this study was to test whether relatedness of the tasks on both screens could be a facilitator of advertising effects via attention and subsequently program involvement between different multiscreening conditions. The study confirmed that advertising was more effective when people used a single screen than when people were multiscreening. However, this study also showed that not all multiscreening situations are equally detrimental to advertising effectiveness. It was found that advertising was more effective when people were multiscreening with related tasks than when people were multiscreening with unrelated tasks. The underlying processes of these effects were attention to the television show and subsequent program involvement. The results confirmed the hypotheses. Moreover, these results appeared to be robust over two studies with different multiscreening settings and different samples.

The findings of the study provide four valuable contributions to the advertising and multitasking literature. First, this study provides insight into how multiscreening affects advertising outcomes. Previous studies have often examined direct effects of multiscreening on advertising outcomes (e.g., Angell et al. 2016; Kazakova et al. 2016) with some rare exceptions (Chinchanachokchai, Duff, and Sar 2015; Segijn, Voorveld, and Smit 2016). The current study contributes to this knowledge by examining attention and subsequently program involvement as underlying mechanisms. This knowledge helps provide a better understanding of how multiscreening affects advertising outcomes.

Second, this study contributes to relatedness between tasks when multiscreening by examining task relevance—the most general level of relatedness—as a facilitator of advertising effects between different multiscreening conditions. A meta-analysis of media multitasking found that task relevance was a moderator of multitasking effects (Jeong and Hwang 2016). However, most studies that manipulated this factor found no differences between related and unrelated multiscreening (Kazakova et al. 2016; Van Cauwenberge, Schaap, and van Roy 2014). An explanation could be that these studies did not look into underlying mechanisms. Attention appeared to be an important difference among the three studies. The results of this study confirmed the important role of attention when multiscreening. Exposure may be sufficient to affect brand memory and brand attitudes. However, when combining multiple tasks, attention becomes a key factor. Furthermore, involvement is necessary to remember specific elements within the media content, such as an advertisement or product placement. The results of this study showed that a difference between related versus unrelated multiscreening can be found in the amount of attention that people devote to both tasks.

Third, the results of the study showed a difference not only between multiscreening and single screening conditions but also between different multiscreening conditions. Multitasking performance is often assessed based on single tasking performance. Successful multitasking is often defined as no decrease in multitasker performance compared to single-tasker performance (Lang and Chzran 2015). The current study goes beyond the comparison of multiscreening versus single screening and shows that effects can also differ among different multiscreening conditions. Future research should further examine differences among multiscreening conditions and how these differences affect information processing and advertising effects.

Fourth, this study contributes to the methodological knowledge of multiscreening research because it uses two different methodological approaches. The first methodological approach examines multiscreening on a split screen with computer tasks (e.g., Chinchanachokchai, Duff, and Sar 2015; Van Cauwenberge, Schaap, and van Roy 2014; Wang et al. 2012), and the second methodological approach examines multiscreening with different tasks on separate screens (Kazakova et al. 2016; Segijn, Voorveld, and Smit 2016). To the best of our knowledge, this is the first multiscreening study that tested a conceptual model by both methodological approaches. Both approaches yielded similar results, which is good news because it indicates that the results of both methodological approaches are complementary. However, the studies had more differences than just the methodological approach. Therefore, more research is needed to provide further validation for this claim. Although the results of the current study showed that both approaches can be used to examine multiscreening effects, future researchers should carefully consider the opportunities and limitations of each approach when conducting their studies. A split-screen computer task is suitable for online studies, which offer the opportunity to examine the phenomenon among a more representative sample in a shorter period of time but with a less controlled environment. In contrast, an experiment with different tasks on different screens is more suitable for a laboratory experiment and could be more controlled. However, the sample is often bound to students, and a laboratory experiment is more time-consuming than an online experiment. By combining the two methodological approaches in the current study, we benefited from both approaches.

This study also has important implications for practitioners. The results showed that multiscreening is not necessarily bad for advertisers, as is sometimes assumed. The results showed that multiscreeners have worse brand memory and less positive attitudes toward brands compared to single screeners. However, it is uncertain whether single screeners exist in real life or are an artifact of the research method. In experiments, participants are often asked to pay full attention to a certain

clip. However, in real life, consumers might face all sorts of distractions that the advertiser cannot control, such as people in their surroundings. The results of the current study showed that related multiscreening results in more positive advertising outcomes than unrelated multiscreening. It might be an advantage for advertisers to involve consumers in related multiscreening. Advertisers could influence this related multiscreening to a certain extent by trying to engage consumers by offering ways to interact with the television content on smartphones or tablets. This can be stimulated in various ways, for example, by developing a second screen app to play along. Another possibility, which might be more attractive to advertisers due to its low cost and ease of implementation, is stimulating program-related discussions in social media by using clear hashtags, teasers before the commercial breaks, or offering additional content on social media platforms. For this to work, it is important to make the content easy to interact with, relevant to the watcher, exclusive, and timely (Talbert 2014). The challenge for advertisers will be thinking of creative ways to involve consumers with the television content.

The current study is a first step in unraveling how relatedness could influence advertising effects when multiscreening. However, much more research on this topic is needed to truly understand how relatedness influences advertising effects when multiscreening. Future research could, for example, go beyond self-reported measures of attention and involvement to further deepen our understanding of related multiscreening by using more implicit methods, such as eye tracking (Segijn, Voorveld, Vandeberg, and Smit 2017). In addition, secondary-task reaction time (e.g., Lang et al. 2007) could be used to measure cognitive load in different relatedness conditions. Besides different types of measures, future research could also look into demographic and psychological factors and how these affect advertising effectiveness when multiscreening. (For an overview of studied demographical and psychological factors in relation to media multitasking, see Segijn 2016.) Demographic factors, such as age, gender, and education, are examined in relation to prevalence of media multitasking and multiscreening (e.g., Kononova 2013; Segijn, Voorveld, Vandeberg, Pennekamp, and Smit, 2017; Voorveld et al. 2014) but to a lesser extent in relation to multiscreening and advertising. More important, future research should go beyond demographic variables and look deeper into psychological factors, such as mono- versus polychronicity (Voorveld et al. 2014), sensation seeking, or creativity (Duff, Yoon, Wang, & Anghelcev 2014). Examining these factors will help us achieve a better understanding of user differences in relation to multiscreening and advertising effectiveness and potential confounding factors.

At the beginning of this article, we presented the multilayered levels of relatedness that can be used as a starting point in examining the different levels of relatedness when multiscreening. This typology was necessary to ultimately bring order to the chaos of the relatedness concepts. In the current study, we manipulated the most general level of relatedness—task relevance—while keeping the other two levels of relatedness constant (i.e., the brand was always congruent and there was no repetition of messages). Future research is necessary to manipulate the other levels of relatedness, or combinations of relatedness levels, and examine how these levels affect advertising outcomes when multiscreening. These types of relatedness might be interesting for advertisers and media planners because they have more control over fit and repetition when designing an advertisement or media plan than over task relevance.

NOTES

1. No significant differences were observed between the included and excluded participants in terms of age, gender, or education.
2. A paired-samples t test showed a significant difference between recognition and recall, t (279) $= -5.25$, $p < .001$. Participants scored higher on recognition ($M = 0.37$, $SD = 0.39$) than on recall ($M = 0.27$, $SD = 0.41$).
3. The two multiscreening conditions showed no significant difference in amount of attention to the anagrams, F (1, 122) $= 0.20$, $p = .660$.
4. A paired-samples t test showed a significant difference between recognition and recall, t (184) $= -6.05$, $p < .001$. Participants scored higher on recognition ($M = 0.58$, $SD = 0.39$) than on recall ($M = 0.39$, $SD = 0.41$).
5. We inserted the value 0 for the number of words sent in the single screening condition to be able to control for it in all three media conditions.

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