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Related Multiscreening as a Strategy to Retain Audiences and Increase Persuasion During a Commercial Break

Claire M. Segijn, Theo Araujo, Hilde A. M. Voorveld, and Edith G. Smit

The aim of the study was to deepen our understanding of how related multiscreening affects audience memory and persuasion. A survey was administered after a live television show. The results showed that the higher the perceived relatedness of the multi-screen activity, the more persuasive the message. This effect was mediated by subsequent attention to television content, program involvement, and attention to the commercial break. The model was replicated for three different multiscreen activities: social media use, chatting, and information search. Furthermore, it was found that related multiscreening increased the likelihood of respondents staying tuned to the television after the show.

Current media use rarely consists of undivided attention to television shows without distraction in the form of other screens, such as smart-phones or tablets (Deloitte, 2015). In fact, the simultaneous usage of multiple screens, which is known as multiscreening, is a daily practice among modern audiences, and the literature on this topic is extensive and growing quickly. During the past few years, numerous studies have examined the persuasive effect of combining screens during exposure to media messages. For example, research has shown that multi-screeners

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remember fewer brands (e.g., Angell, Gorton, Sauer, Bottomley, & White, 2016; Segijn & Eisend, 2019) and are more persuaded than singlescreeners (e.g., Chinchanachokchai, Duff, & Sar, 2015; Kazakova, Cauberghe, Hudders, & Labyt, 2016). The examination of multiscreening and persuasion is critical, given that audiences engage in these behaviors on a daily basis (Nielsen, 2018; Voorveld & van der Goot, 2013) and this can have detrimental effects on processing of advertising (Segijn & Eisend, 2019), thereby making multiscreening one of the biggest challenges in the industry (Tiltman, 2013).

The industry sees *related* multiscreening as one solution to this challenge (Talbert, 2014). Related multiscreening occurs when two tasks between two screens have similar or overlapping goals (Wang, Irwin, Cooper, & Srivastava, 2015). An example of related multiscreening is when media users tweet about a television show while it is being aired (Angell et al., 2016; Cameron & Geidner, 2014; Guo, 2018; Guo & Chan-Olmsted, 2015). The effects of related media multitasking have also received scholarly attention (Angell et al., 2016; Segijn, Voorveld, & Smit, 2017a; Van Cauwenberge, Schaap, & van Roy, 2014). Meta-analyses have shown that multitaskers remember less media content when they engage in unrelated tasks compared to related tasks (Jeong & Hwang, 2016; Segijn & Eisend, 2019). A recent study found that related multiscreening can lead to more attention being paid to television content and subsequently more program involvement (i.e., motivated state, signifying interest induced by the television program; Moorman, Neijens, & Smit, 2007), thereby increasing persuasion (Segijn et al., 2017a). The current study builds on this concept and is innovative in four ways.

First, we propose to examine the *perceived* level of relatedness—that is, the extent to which multi-screeners perceive their activities as related to each other. Thus far, earlier research has only investigated relatedness as a dichotomous manipulated concept (e.g., Segijn et al., 2017a; Van Cauwenberge et al., 2014). However, relatedness as manipulated by the researcher and relatedness as perceived by the multi-screener do not automatically match. Therefore, it is important to take a close look at the perceived level of relatedness to introduce more nuance into the debate on the effects of related multiscreening. Second, we take a close look at *why* related multiscreening affects persuasion. We argue that related multiscreening subsequently increases attention to the television show, program involvement, and attention to the commercial break, thereby leading to increased memory and persuasion. Third, we replicate the model among three different multi-screen activities (i.e., social media use, chatting, and information search) to test its robustness. Finally, this is tested in a real-life setting with a live television show. Thus far, most multiscreening studies have consisted of experiments with forced exposure. We believe that it is necessary to capture more naturalistic multiscreening behavior using a real-life setting to increase the ecological validity of the results. We used the Eurovision Song Contest as the live television show. About 204 million people worldwide watched the event, and of this figure, 4.3 million people were watching in the Netherlands (Ritzen, 2017). In addition, the viewers of this television show

are known for their high level of social media engagement, thereby making it ideal for the current research purposes.

Theoretical Background

Related multiscreening and Information Processing

According to the multilayered concept of relatedness (Segijn et al., 2017a), multiscreening can be related on various levels (See Table 1 for an example). First, the tasks of the different screens may have similar or overlapping goals (i.e., task relevance; Wang et al., 2015)—for example, when people watch the Super Bowl while tweeting about the program. Second, a message, such as an advertisement, could be related to the context of one of the two messages (e.g., television program) on the screens (i.e., congruency)—for example, when a sports brand advertises during the Super Bowl. Finally, the messages on the screens could be the same (i.e., repetition), versus a different one on each screens—for example, when the same brand is advertised simultaneously on the television and the mobile device. As shown in Table 1, the three levels of relatedness are not exclusive and can coexist. While the latter two are more focused on the content presented on the screens, task relevance focuses more on the activities that are carried out on the different screens (Segijn et al., 2017a). Therefore, we will focus on task relevance in the context of multiscreening.

The different concepts of relatedness can be explained by different mechanisms and theories. Because we focus on task relevance, we use the theory of threaded cognition (Salvucci & Taatgen, 2008), which states that people use different "threads" to process information, and each serves a different goal. Different threads compete for cognitive resources; thus, cognitive demand increases when different tasks with varied goals are processed through different threads. However, multiple tasks with an overarching goal—that is, when tasks are relevant to each other—are processed through the same thread. These tasks do not have to compete for cognitive resources and are less cognitively demanding than unrelated ones. Therefore, compared to unrelated tasks, related ones are more easily processed, thereby resulting, for example, in a higher recall of media content.

As predicted by the theory of threaded cognition, meta-analyses have shown that multi-taskers remember less when they combine unrelated tasks, compared to related ones (Jeong & Hwang, 2016; Segijn & Eisend, 2019). In these studies, the researchers examined different media multi-tasking studies and coded whether their tasks were related to each other. Thus, the studies included in the meta-analyses did not investigate the differences in relatedness themselves. Additionally, some experiments have found support for the role of task relevance. For example, Angell et al. (2016) showed that related multiscreening had a positive effect on how many brands people could remember from the billboards of a broadcast soccer match when they were actively tweeting/texting while watching it. Segijn et al. (2017a) showed that related (vs. unrelated) multiscreening leads indirectly to more positive

Table 1
Multilayered Concept of Relatedness Example

multiscreening Example				Relatedness level		
Television	Mobile device	Brand	Ad placement	Task relevance	Congruency	Repetition
Eurovision	Tweet about Eurovision	Headphones	Both screens	+	+	+
Eurovision	Tweet about Eurovision	Headphones	One screen	+	+	-
Eurovision	Tweet about Eurovision	Flight tickets	Both screens	+	-	+
Eurovision	Tweet about Eurovision	Flight tickets	One screen	+	-	-
Eurovision	Tweet about soccer match	Headphones	Both screens	-	+	+
Eurovision	Tweet about soccer match	Headphones	One screen	-	+	-
Eurovision	Tweet about soccer match	Flight tickets	Both screens	-	-	+
Eurovision	Tweet about soccer match	Flight tickets	One screen	-	-	-

Note. This example is based on Segijn et al. (2017a)

cognitive and affective advertising outcomes because it increases attention to the television content, subsequently increasing program involvement, which, in turn, leads to better memory and more persuasion.

Perceived Relatedness and Attention

In experiments, relatedness is often manipulated by including a condition in which participants engage in related (vs. unrelated) tasks (Segijn et al., 2017a; Van Cauwenberge et al., 2014) or the relatedness of the multi-screen activity is later coded by the researchers (Angell et al., 2016). Whether the participant *perceives* the activity as related has not yet been accounted for. Actual relatedness (as manipulated) and perceived relatedness (the degree to which the multi-screener perceives that the multiple screen activities in which he or she engages are related) may not automatically match, which is similar to the research that has been conducted on personalization (De Keyzer, Dens, & De Pelsmacker, 2015; Maslowska, Smit, & van den Putte, 2016) and interactivity (Song & Zinkhan, 2008; Voorveld, Neijens, & Smit, 2011). It might be important that multi-screeners perceive a message as related before any favorable relatedness effect can take place, because perceived relatedness in particular could steer goal direct attention to messages while multiscreening (Lang, 2000).

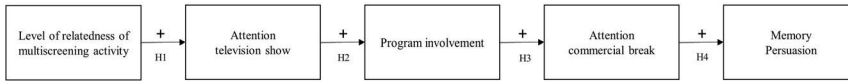
When multiscreening, visual attention needs to be divided between tasks (Brasel & Gips, 2011; Segijn et al., 2017b). The way in which attention is divided can be driven by either bottom-up or top-down processes. When attention is driven by bottom-up processes, it is guided by features of the media content (Pieters & Wedel, 2004; Smit, Neijens, & Heath, 2013), such as loud noises or sudden silence that initiate orienting responses (Lang, Park, Sanders-Jackson, Wilson, & Wang, 2007). Conversely, top-down processes are guided by internal goals (Eysenck & Keane, 2005). The latter may drive attention allocation when multi-screeners are engaged in related activities, because more attention will be allocated to an activity that is relevant to one's personal goal (Lang, 2000). For example, if people are chatting about a television show that they are watching, they have to allocate goal direct attention to the show to enable them to keep talking about it. Thus, higher perceived levels of the relatedness of the multi-screen activities will lead to more attention being devoted to the television show.

H1: Higher perceived relatedness of a multi-screen activity will lead to more program attention.

How Related multiscreening Can Impact Persuasion

Attention to a television show does not directly influence the persuasion of brands in the commercial break, because people are not yet exposed to these commercials that are aired *after* the television show. However, attention to the program can influence program involvement. Because program involvement leads to enhanced processing, it has been related to increased recall (Moorman et al.,

Figure 1
Conceptual Model



2007; Tavassoli, Shultz, & Fitzsimons, 1995) and more positive attitudes (Krugman, 1983; Tavassoli et al., 1995). Indeed, Segijn et al. (2017a), who studied related multiscreening and advertising effectiveness, found that related (vs. unrelated) multiscreening increased attention to the television show and, subsequently, program involvement. This led to higher memory and more positive brand attitudes. The link between program involvement and persuasive outcomes can be explained by increased attention to the commercial break that follows the television show. Previous studies have found that increased program involvement carries over to the commercial break and that subsequent attention to the commercial break leads to more persuasion (Moorman et al., 2007; Moorman, Willemsen, Neijens, & Smit, 2012). In the current study, we will test this full model (Figure 1) from related multiscreening to memory and persuasion, mediated by subsequent attention to the television show, program involvement, and attention to the commercial break.

H2: Higher levels of program attention lead to more program involvement.

H3: More program involvement leads to more attention to the commercial break that follows the program.

H4: More attention to the commercial break leads to (a) greater brand memory (i.e., brand recognition) and (b) more persuasion (i.e., brand attitude).

Multiscreen Activities

We will test the same model against different multi-screen activities to control whether the type of "multi-screen activity" may influence how related multiscreening affects memory and persuasion. Research on multiscreening and relatedness has made use of different activities to manipulate related multiscreening, such as tweeting (Angell et al., 2016), chatting (Segijn et al., 2017a), or searching for information (Study 1 by Kazakova et al., 2016; Van Cauwenberge et al., 2014). These activities are also common in real-life (SKO 2016) and can vary with regard to their level of relatedness to television content. We do not know whether the effects are an artifact of the specific multi-screen activities or if the results can be generalized to other activities. Thus, to advance research and test the robustness of

the model, we will test the same conceptual model for the following three activities: social media use, chatting, and information search.

Method

Context

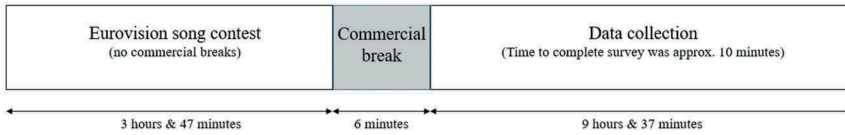
The data were collected using an online survey that was administered immediately after the commercial break that was aired after the Eurovision Song Contest final in 2016. Thus, the survey did not interrupt multiscreening behavior during the television show nor the commercial break. In addition, the time between the commercial break and the survey was limited by administering the latter immediately after the commercial break ended (See Figure 2). The Eurovision Song Contest is a live television show in which European countries enter their best songs and compete against each other. It was the most watched live television show in the Netherlands that year (SKO, 2017). In addition, viewers' high level of social media engagement while watching this television show makes it ideal for the current research purposes.

The Eurovision Song Contest was aired on the *Public Broadcaster* (i.e., NPO) in the Netherlands. Dutch media regulations dictate that programs on public channels may not be interrupted by commercials; commercials can be aired between programs only (Media Act, 2008). Advertising on public broadcasting channels is often limited, in order to keep these channels independent of commercial interests. Thus, the commercial break aired at the end of the television show was the only one to which the participants were exposed on that channel, after watching the program (Figure 2).

Sample and Procedure

The respondents were recruited from a panel that was hosted by a Dutch online market research company, PanelClix. The predefined selection criteria were that the

Figure 2
Timeline of Data Collection



respondents had watched the television show, were at least 18 years old, and owned a Facebook or Twitter account, which increased their chances of using social media during the show. Potential respondents did not know beforehand that they would receive a survey invitation. As such, they had no prior knowledge of the survey; therefore when they were watching the show, they were able to engage in viewing behavior in a natural manner. The certified company sent out a survey invitation to the potential respondents who met the criteria, and in it they were told that the survey was about media use, brands, and the Eurovision Song Contest. A link to the survey was included in the invitation. The time that the respondent started and completed the questionnaire was recorded by the survey software (i.e., Qualtrics). This differed per respondent and correlated with memory. Therefore, we included this as a control variable in all the analyses.

Informed consent was obtained before the questions were displayed. The survey, which took about 10 minutes to complete, included the following variables in this order: demographics, whether they watched the Eurovision Song Contest, whether they used another screen while watching the show (1 = *yes*, 0 = *no*), brand recognition, brand attitude, respondents' media use during the show, multi-screen activities, attention, and control variables. Only the respondents who watched the show could complete the survey. At the end of the survey, the respondents were thanked for their time and redirected to the host's website, where they received credits from the research company for their participation.

In total, 880 respondents completed the survey. Three respondents were excluded because they watched on a foreign channel (i.e., they were exposed to different brands). In addition, 80 respondents (9.09%) were excluded because they failed all three attention checks. These checks were items such as "Choose the option 'totally disagree,'" placed between other items to check whether the respondents were reading them carefully. A total of 797 responses were considered valid, of which 505 participants (63.4%) used another screen while watching (i.e., the multi-screeners; M_{age} = 35.39, SD_{age} = 9.57; range 18–55, 52.3% female). However, not all respondents were exposed to the commercial break. In total, 203 (M_{age} = 36.03, SD_{age} = 9.88; range 18–55, 45.3% female) multi-screeners were also exposed to the commercial break. This final sample (n = 203) was used in all the analyses, unless stated otherwise. Almost half of the respondents in this final sample completed the survey on a smartphone (44.8%), 44.3% on a laptop or desktop PC, 10.4% on a tablet, and 0.5% on an unknown device. While most respondents watched at home (87.7%), others watched at someone else's home (10.3%) or elsewhere (2.0%). These respondents simultaneously used on average 1.47 different screens (SD = 0.63). When they used another screen during the television show, the smartphone was used most often (79.7%), followed by a tablet (31.3%), laptop (29.1%), and computer (9.9%).

Measures

Multi-screen Activity and Perceived Relatedness. The survey focused on three different multi-screen activities to test the robustness of the model: social media use (e.g., Facebook, Twitter, Instagram), chatting (e.g., WhatsApp, Messenger, and Hangouts), and information search. The respondents were asked to indicate whether they were engaged in any of the three activities while the show was on (social media use = 74.9%, chatting = 67%, and information search = 56.7% of the multi-screeners). The respondents could thus check the boxes for all three activities. For the activity in which they engaged, respondents were asked about the perceived level of relatedness of that activity to the Eurovision contest (1 = *totally unrelated*, 7 = *totally related*; Segijn et al. (2017a) via social media use (M = 3.45, SD = 2.03), chatting (M = 3.14, SD = 2.06) and/or (information search M = 3.33, SD = 2.24).

Outcome Measures. The outcome measures included in this study were memory and persuasion. Memory consisted of a *brand recognition* measure which comprised a list of all the brands that were included in the broadcast (N = 7) during the commercial break, as well as a competitor's brand in the same category. The brands were listed in random order. The list also included the options "I haven't seen any commercials" and "I can't remember any brands." The respondents were asked to tick all the boxes of the brands that they could remember seeing during the commercial break (Voorveld, 2011). A sum score of all of the correctly remembered brands (M = 0.29, SD = 0.83) was computed.

Persuasion consisted of a *brand attitude* measure asking to what extent the respondents were positive about a certain brand (0 = *not at all*, 100 = *very much*). The question was about the first brand appeared immediately following the television show (M = 33.52, SD = 26.93). The first brand was chosen to measure the carry-over effect of attention to the television show and program involvement. The brand contained a lottery advertisement, and 28.1% of the participants had experience with this brand.[1]

Mediators. Attention was measured using two items which asked the respondents how much attention they paid to the television show (M = 60.10, SD = 22.98) and to the commercial break that followed it (M = 13.00, SD = 19.57) on a scale of 0 = *no attention* to 100 = *full attention* (Jeong & Hwang, 2012). This scale showed a high correlation with eye-tracking measures of attention in a multi-screen situation (Segijn et al., 2017b).

Program involvement was measured on a 7-point scale (1 = *totally disagree*, 7 = *totally agree*) using three items (Cronbach's alpha = .91, M = 4.21, SD = 1.37). An example of an item is "I found the television clip fascinating" (Moorman et al., 2007).

Control Variable. We set the time between the television show and the questionnaire response as a control variable. This is important because the survey was administered in a real-life and near real-time setting, and not all respondents had the same time lag between the end of the commercial break and the questionnaire. The time lag was measured by subtracting the end time of the commercial break that followed the television show from the start time of the survey (in minutes; M = 389.86, SD = 183.06; range 8.83–577.03). The time lag was included as a control variable in all models.

Results

Testing the Model

To analyze the model, PROCESS Model 6 (Hayes, 2013) with 1,000 bootstrap samples to estimate the bias-corrected bootstrap confidence intervals (BCBCIs) at a 95% confidence level. The tested paths are presented in Figure 3. The dependent variables were memory (i.e., brand recognition) or persuasion (i.e., brand attitude). The independent variable was the perceived relatedness of the multi-screen activities. Separate models were used for each multi-screen activity to test whether the results held for different activities.[2] A correlation matrix with all the main variables is presented in Table 2.

The analyses confirmed the statistical models for memory for social media use (indirect effect = .01, boot SE = .01, 95% BCBCI [.001, .029]), chatting (indirect effect = .01, boot SE = .01, 95% BCBCI [.000, .039]), and information search

Figure 3
Statistical Model Tested for Each of the Three Multiscreen Activities

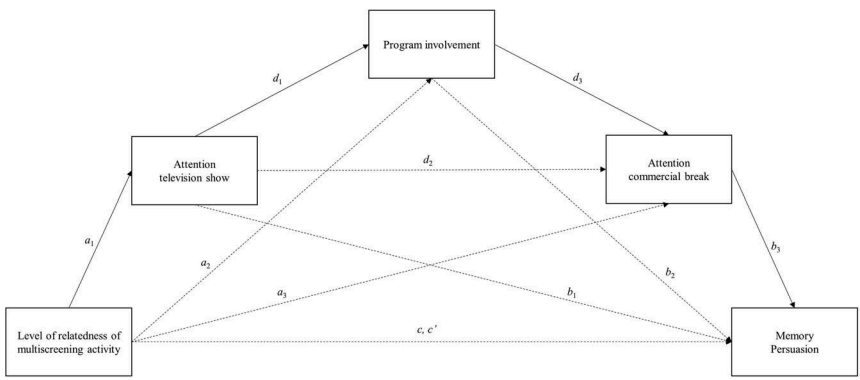


Table 2
Correlation Matrix of Main Variables

	1	2	3	4	5	6	7	8
1. Social media use [a]	x	.75***	.79***	.45***	.30***	.25**	.13	.11
2. Chatting [a]		x	.82***	.39***	.31**	.26**	.07	.08
3. Information search [a]			x	.41***	.36**	.35**	.19†	.18
4. Attention television show				x	.64***	.23***	.10†	.23***
5. Program involvement					x	.24***	.13*	.33***
6. Attention commercial break						x	.26***	.42***
7. Memory							x	.05
8. Persuasion								x

[a]This variable presents the perceived level of relatedness of each multiscreen activity.
***$p < .001$, **$p < .01$, *$p < .01$, †$p < .10$

(indirect effect = .01, boot SE = .01, 95% BCBCI [.000, .039]). In addition, the models were confirmed for persuasion for social media use (indirect effect = .29, boot SE = .18, 95% BCBCI [.038, .802]), chatting (indirect effect = .26, boot SE = .20, 95% BCBCI [.032, .861]), and information search (indirect effect = .31, boot SE = .19, 95% BCBCI [.066, .870]). Table 5 shows that the explained variance for persuasion is generally higher than the explained variance for memory. Furthermore, the model for information search explains the most variance in memory (17.9%) and the model for chatting explains the most variance in persuasion (28.6%). In general, however, the models for the three multi-screen activities had similar levels of explained variance; therefore, the findings are comparable in magnitude.

As expected, the analyses showed that higher levels of relatedness of the multi-screen activity resulted in multi-screeners paying more attention to the television show ($b_{\text{social media}} = 5.27$, $p < .001$)[3]. Subsequently, the more involved that respondents were with the show ($b_{\text{social media}} = .04$, $p < .001$), the more attention they will pay to the commercial break that followed it ($b_{\text{social media}} = 2.77$, $p = .054$), thereby resulting in greater memory ($b_{\text{social media}} = .01$, $p < .001$) and more persuasion ($b_{\text{social media}} = 0.53$, $p < .001$; Tables 3 and 4). This applies to all three multi-screen activities.[3] Thus, all hypotheses are supported, except for Hypothesis 3, because this path did not yield significant results for social media use ($p = .054$) and chatting ($p = .057$). Despite that, the full sequential mediation model is found to be significant.

Additionally, the analyses showed an indirect effect of the perceived level of relatedness between the multi-screen activity and the TV show on memory and persuasion via attention to the commercial break ($b_{\text{social media}} = 2.10$, $p = 0.17$). Thus, an activity performed during the show had a direct effect on the attention paid

Table 3
Unstandardized Regression Coefficients of Paths in Model

Perceived level of relatedness per activity	a_1	a_2	a_3	d_1	d_2	d_3
Social media use	5.27 (.85)***	0.01 (.05)	2.10 (.87)*	0.04 (.00)***	−0.03 (.09)	2.77 (1.43)†
Chatting	4.56 (1.00)***	0.05 (.06)	1.88 (.95)†	0.03 (.00)***	0.00 (.10)	1.85 (2.02)
Information search	4.07 (.99)***	0.09 (.06)	2.58 (1.06)*	0.03 (.00)***	0.05 (.12)	4.27 (1.91)*

Note. The table presents unstandardized regression coefficients (boot standard error) and corresponds with the paths in Figure 3. The model controls for time lag between questionnaire and end of the commercial break. BCBCI = bias-corrected 1,000 bootstrap confidence interval.
***$p < .001$, **$p < .01$, *$p < .01$, †$p < .10$

Table 4
Indirect Effect of Multiscreen Activity on Memory and Persuasion

Dependent variable	Perceived level of relatedness per activity	Indirect effect [95% BCBCI]	b_1	b_2	b_3	c (total)	c' (direct)
Memory							
	Social media	**0.01 (.01)**	−0.00	0.03 (.06)	0.01 (.00)***	0.03	0.02 (.04)
		[.001, .029]	(.00)			(.03)	
	Chatting	**0.01 (.01)**	0.00	0.06 (.07)	0.01 (.00)***	0.04	−0.01 (.04)
		[.000, .032]	(.00)			(.04)	
	Information search	**0.01 (.01)**	.00 (.01)	0.02 (.08)	0.02 (.00)**	**0.07**	0.00 (.05)
		[.000, .039]				**(.05)**	
Persuasion							
	Social media	**0.29 (.18)**	0.18	3.03	0.53 (0.10)***	**2.90**	1.36 (1.09)
		[.038, .802]	(.11)	(1.78)†		**(0.71)**	
	Chatting	**0.26 (.20)**	0.30	1.85	0.54 (.12)***	**3.14**	−2.04
		[.032, .861]	(.12)*	(2.02)		**(.88)**	(1.19)†
	Information search	**0.31 (.19)**	0.11	2.25	0.55 (.14)***	**2.78**	−0.55
		[.066, .870]	(.15)	(2.47)		**(.95)**	(1.38)

Note. The table presents unstandardized regression coefficients (boot standard error) and corresponds with the paths in Figure 3. The model controls for time lag between questionnaire and end of the commercial break. BCBCI = bias-corrected 1,000 bootstrap confidence interval. Bold text is significant as indicated by BCBCI.
***$p < .001$, **$p < .01$, *$p < .01$, †$p < .10$

Table 5
Explained Variance of the Different Models per Dependent Variable

	Memory		Persuasion	
Level of relatedness	Total effect model	Mediation model	Total effect model	Mediation model
Social media	3.2%	12.1%	2.2%	25.9%
Chatting	2.2%	14.1%	1.2%	28.6%
Information search	3.5%	17.9%	3.4%	24.6%

Note. The percentages in the columns of total effect model are the explained variance of the level of relatedness per multiscreening activity on the dependent variable controlled for the variable time lag. The percentages in the mediation model columns are the explained variance of the regression model including all variables.

to the commercial that was broadcast *after* the show. We conducted additional analyses to test a possible explanation for this unexpected result of the relationship between the perceived level of relatedness and attention to the commercial break.

Additional Analysis

The results of the previous analyses showed that the perceived level of relatedness of the multi-screen activity during the television show was sometimes directly related to the attention paid to the commercial break after it. One explanation could be that related multiscreening increases the likelihood of multi-screeners remaining on the same channel and paying more attention to the commercial break than multi-screeners who engage in unrelated activities. We conducted additional analyses to determine whether related multiscreening increased the likelihood of multi-screeners' exposure to the commercial break. Logistic regressions were conducted with the perceived level of relatedness of all three multi–screen activities as independent variables and with commercial break exposure (1 = *yes*, 0 = *no*) as the dependent variable in the complete sample of multi-screeners (n = 505). In line with expectations, the results showed that the more related the activities, the higher the likelihood of the respondents' exposure to the commercial break (Chatting b^* = .12; Social media use b^* = .11; Information search b^* = .13). This was seen in all three multi-screen activities (chatting χ^2 (1) = 4.25, p = .039; social media use χ^2 (1) = 4.04, p = .025; and information search χ^2 (1) = 4.21, p = .040).

Discussion

The aim of the study was to examine the relationship between related multiscreening and persuasive outcomes. The study builds on previous multiscreening research by (a) measuring *perceived* relatedness, (b) expanding the model of Segijn et al. (2017a) with attention to the commercial break as an explanation for the effect of program involvement on memory and persuasion, (c) replicating the model for three different multi-screen activities (i.e., social media use, chatting, and information search), and (d) replicating the model in a real-life setting (vs. a lab). The three main results of the study are discussed below.

First, the results of this study provide an answer to the question of the extent to which different levels of relatedness influence memory and persuasion. The results showed an indirect influence on the perceived level of relatedness. The higher the perceived levels of relatedness of the multi-screen activity, the greater the memory and persuasion. In addition, the results showed the same conceptual model for all three multi-screen activities, implying that the model is robust for the three different multi-screen activities, with only small differences in explained variance per multi-screen activity.

Second, this study offers insight into the underlying mechanism of the effect of related multiscreening on memory and persuasion. As expected, the effect of related multiscreening on memory and persuasion was mediated via subsequent attention to the television show, program involvement, and attention to the commercial break, as shown in the conceptual model. Thus, the data confirmed the conceptual model, and the hypotheses are accepted.

Finally, the study also showed an unexpected additional result. This result showed that the perceived level of relatedness of the multi-screen activity employed while watching television was also directly related to attention to the commercial break following the show. As an explanation, we tested whether related multiscreening increases the likelihood of multi-screeners remaining on the same channel. The results confirmed this explanation, showing that more related multi-screen activity resulted in a higher likelihood of respondents' exposure to the commercial break that followed the television show. This might be because there is a greater need for related tasks to be performed synchronously, whereas less time pressure exists for unrelated tasks. Therefore, it is more likely for consumers to finish their related multi-screen activity and remain on the channel, which will broadcast the commercial break.

This study has important theoretical implications. First, one major theoretical contribution is that the study provides further understanding of the effects of related multiscreening on memory and persuasion. Previous studies have shown a positive relationship between related multiscreening and persuasive outcomes (Angell et al., 2016; Segijn et al., 2017a). The current study showed that it is important to consider the perceived level of relatedness when studying the effects of the phenomenon in a real-life setting. Future research should further examine perceived (vs. actual) levels of

relatedness in a multiscreening context. For example, later research could manipulate actual relatedness and measure perceived relatedness within one study. This can provide valuable insights into the extent to which these two correlate in a multiscreening context. Second, this study helps explain why related multiscreening would influence memory and persuasion. The study offers insights into the underlying mechanisms of the effect of related multiscreening on persuasion. Current study findings expand on the model tested by Segijn et al. (2017a) by adding attention to the commercial break as an explanation for the relationship between program involvement and persuasive outcomes.

In addition to its theoretical implications, this study has important practical implications. First, it showed that it is beneficial for broadcasters and advertisers to stimulate related multiscreening. Regarding the benefit to broadcasters, findings shed light on the television show and program involvement. With regard to the benefit to advertisers, this increased program involvement could carry over to the subsequent commercial break. This is an important implication, because previous research has indicated that multiscreening is part of our daily routine (Nielsen, 2018), and the industry is concerned about its implications (Tiltman, 2013). The results showed that stimulating related multiscreening could also have positive effects for the industry. This result is especially applicable to countries in which (public) broadcasters have breaks only *between* programs. Additionally, in a non-multitasking context, similar results were obtained for the recall of ads placed in a commercial break *within* a program (Moorman et al., 2012). Furthermore, multitasking patterns may differ between commercial and regular programming. Observational research in the U.S. showed that contrary to commonly held beliefs, commercials are associated with rather low levels of multitasking (Voorveld & Viswanathan, 2014). Future research is needed to gain insight into whether the type of multitasking differs across commercials and regular programming. In addition, future research could replicate the findings related to nontraditional television viewing—for example, streaming services with skippable ads.

Second, the results not only indicate the positive influence of related multiscreening on attention and persuasive outcomes but also show that the perceived level of relatedness is important. More related multi-screen activity benefits the broadcaster and advertiser; the multi-screen activity itself is less relevant. Therefore, it is possible to think of any activity that stimulates multiscreening behavior, provided that it is related to the television show. The challenge for the industry is to find creative ways to engage multi-screeners with the television show. An added value of these related multi-screen activities might be the building of long-term relationships with television audiences (Lin, Chen, & Sung, 2018).

Finally, it was found that related multiscreening behaviors increased the likelihood that multi-screeners would keep the television on the same channel on which the television show that had just been aired. Therefore, it is more likely for multi-screeners to be exposed to the commercial break that follows the show. This is relevant to broadcasters, because audiences often change channels when commercial breaks

are on (Kent, 2013; Van Meurs, 1998). Thus, related multiscreening could be a strategy to retain audiences. Furthermore, this is beneficial to advertisers because many consumers change channels or use other techniques to avoid commercials (Fransen, Smit, & Verlegh, 2015; Speck & Elliott, 1997). In addition, staying on the same channel with the commercial break while multiscreening is highly relevant to advertisers. Previous studies have shown that multi-screeners are less able to resist a persuasive message (Jeong & Hwang, 2012; Segijn, Voorveld, & Smit, 2016). This decreased resistance improves multi-screeners' attitudes to the advertised brands (Segijn et al., 2016). This could increase the likelihood that multi-screeners continue to multi-screen during commercial breaks, with positive persuasive outcomes as the result.

The contributions of this study need to be interpreted in light of its limitations. First, more information is needed about the different multi-screen activities and their implications for information processing. Multi-screen activities can vary across levels of cognitive demand, modalities, and other media-related characteristics (Duff & Segijn, 2019). Future research could further investigate this and test all three activities in one model. An observational study could provide additional insights into engagement in multi-screen activities while television watching (Segijn, Xiong, & Duff, 2019)—for example, by studying the timing and length of (related) multi-screen activities. In addition, gathering more information on the viewing situation (e.g., co-viewing and other non-multi-screen activities; Krugman & Johnson, 1991) could be interesting, as this would enable more insights into how related versus unrelated (multi-screening) activities can affect persuasion and memory. Finally, because of the real-life nature of the study, we were unable to measure or control for attitude changes. However, we attempted to account for this by measuring respondents' familiarity with the brand.

Second, one must be careful when drawing causal conclusions based on the current model. Survey data cannot guarantee internal validity and determine causal relations, as is done with experiments. However, the conceptual model that was tested and confirmed was partially tested beforehand in an experimental setting (Segijn et al., 2017a), except for the attention to the commercial break. Nonetheless, the commercial break followed the television show aired in real time (Figure 2). Therefore, it is safe to assume that attention to the television program carries over to the commercial break and not vice versa. Finally, concerns have been raised about respondents' ability to provide accurate estimates of their past behavior, compared to actual tracking data (Araujo, Wonneberger, Neijens, & Vreese, 2017; Wonneberger & Irazoqui, 2016). While our measures for activities may be partially affected by potential inaccuracies in self-reports, we believe that there is minimal reason for concern in this case, as the measures in the current study related to (a) a very restricted and well-delimited period and (b) were dichotomous (i.e., whether or not an activity was undertaken), which is arguably easier to recall than having to provide an estimate of time.

In conclusion, this study showed the positive effects of related multiscreening on memory and persuasion. It showed that it is worth the investment to encourage

related multi-screen activities for both program developers and advertisers. Finally, related multiscreening not only influences attention to the television content that appeared on a specific channel but also increases the likelihood that multi-screeners will remain tuning to the same channel.

Notes

1. Brand familiarity did correlate with brand attitude (r = .30, $p < 001$). The results of the models did not change when controlling for brand familiarity.
2. We could not combine the activities, because the participants answered only the question about relatedness when they checked the box. This resulted in three different subsamples. Some respondents participated in one of the three activities, some two, and a few ($n = 66$) in all three. We also conducted the analyses with "number of activities" as the covariates. The majority of the results remained the same. Only the models for the chatting activity were no longer significant. However, this could be due to a lack of power (Type II error).
3. The text presents only the unstandardized regression coefficients for the social media activity. The information related to the other activities can be found in Tables 3 and 4. Additionally, some individual paths show non-significant results, but the indirect effects of the models are significant.

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