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**Everyday multiscreening**

*How the simultaneous usage of multiple screens affects information processing and advertising effectiveness*

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# Chapter 2

A Typology  
of Multiscreening



## INTRODUCING THE TOPIC

The saturation of media and the rise of convergent media have made media multitasking into a pervasive phenomenon (e.g., Rideout, Foehr, & Roberts, 2010). Media multitasking is the use of multiple media at the same time (e.g., Voorveld, 2011). About 28% of consumers' media time consists of media multitasking (MediaTijd, 2014) and the expectation is that this will rapidly increase. Media multitasking is often described as a homogenous phenomenon, but the occurrence and effects may differ depending on the combination of media because of different medium characteristics (Voorveld, Segijn, Ketelaar, & Smit, 2014; Wang, Irwin, Cooper, & Srivastava, 2015). One form of media multitasking is 'multiscreening', multitasking with multiple screens, such as the combination of a TV and a second screen medium.

Second screen media (i.e., smartphone, tablet, or laptop) is a collective term for media with internet access that you can use simultaneously with the content on TV (SKO, 2012). A second screen is not just the second screen available in the room and it is not the screen that receives less attention than the first screen. It is called 'second screen' because it could be an addition to the TV content, which is traditionally assumed to be the first screen. There are different functions of a second screen. First, it could be used to make the TV content more interactive, for example by playing along with TV quizzes. Second, a second screen could have a social function by stimulating social interaction among viewers, for example by tweeting about TV content. Finally, a second screen could enhance the viewers' experience by providing more information about the TV content (Holmes, Josephson, & Carney, 2012), for example by providing statistics about the athletes during the Olympics or providing additional information about the product advertised.

Almost half of the tablet and smartphone owners use their device daily while watching TV (Nielsen, 2013). The task on the second screen device may differ between tasks related to the TV content (e.g., social media and second screen applications to interact with TV content) to tasks unrelated to the TV content (e.g., e-mailing, surfing, and banking; SKO, 2012). Almost half of tablet owners search for information related to the TV content when they are watching (Nielsen, 2013). This could, for example, be information about the product advertised on TV. As mentioned before, some TV shows develop specific second screen apps to engage the consumer with their program. An example of the use of second screen is TV show "The Voice". In this singing contest, people at home can play along by voting and guessing which candidate will continue to the next round. In this application both the TV show and the second screen application are sponsored by the same brand. Multiscreening could offer new ways of

advertising. However, not much is known about the phenomenon of multiscreening and the implications for advertising effectiveness. Therefore, the aim of this chapter is to describe multiscreening and its implications for advertising effectiveness.

### **Media Multitasking and Advertising Effectiveness**

Overall, it is assumed that media multitasking has a negative effect on persuasion (e.g., memory of brand/message). This view is mainly based on cognitive resource theories, such as the limited capacity model of mediated message processing (Lang, 2000). This theory argues that people have limited resources for encoding, storing, and retrieving information. When people engage in media multitasking, they have to divide these resources among multiple tasks. Therefore, attention to one task goes at the expense of attention to the other task. In addition, decrements in performance are the result of requiring more resources than resources available.

Despite some cognitive deficits, it is argued that media multitasking could also have positive effects. It is, for example, argued that people could have more positive (brand and message) attitudes (e.g., Chinchanchokchai, Duff, & Sar, 2015; Collins, 2008; Jeong & Hwang, 2012, 2014; Voorveld, 2011). An explanation for this positive effect could be that, because of these limited cognitive capacities, people are also less able to resist a persuasive message (Jeong & Hwang, 2012, 2014; Segijn, Voorveld, & Smit, 2016), and lower resistance leads to more positive attitudes (Moyer-Gusé & Nabi, 2010; Segijn et al., 2016).

Whether media multitasking will lead to an increase or decrease in persuasion depends on several factors. Recently, it is argued that different forms of media multitasking differ due to the combination of tasks and are, therefore, hard to compare. To get insight into these differences, multi-dimensions of media multitasking were distinguished based on cognitive resource theories (Wang et al., 2015). Because multiscreening is a relatively new form of media multitasking research in this area is scarce. The multi-dimensions of media-multitasking serve as a stepping stone to describe and explain this new phenomenon.

## **MULTI-DIMENSIONS OF MEDIA MULTITASKING**

In the article of Wang et al. (2015) multi-dimensions of media multitasking are described. In this framework the behavior of media multitasking is conceptualized. This framework allows to differentiate media multitasking behaviors based on different dimensions. They divide the dimensions into four categories with in each category

several dimensions of media multitasking. The categories and dimensions are labeled as 1) task relations (i.e., task hierarchy, task switch, task relevance, shared modality, and task contiguity), 2) task inputs (i.e., information modality, information flow, and emotional content), 3) task outputs (i.e., behavioral responses and time pressure), and 4) user differences.

Based on this framework and existing literature in the field of media multitasking, inferences can be made about the processing and the effects of advertising while multiscreening. The framework of Wang et al. (2015) is used in this chapter to describe a relatively new form of media multitasking, multiscreening. Multiscreening may be different than other forms of media multitasking, because each combination of media could lead to different effects caused by different characteristics of the media.

Furthermore, recent literature is discussed to provide an overview of what is known about multiscreening and advertising effectiveness, and to provide directions for future research. All dimensions are summarized in Table 2.1.

### Task Relations

Media multitasking occurs when people shift their attention between tasks that are independent, but concurrent tasks (Adler & Benbunan-Fich, 2012). Thus, media multitasking entails multiple tasks. The first category of the framework of Wang et al. (2015) is about the relations between the tasks involved in media multitasking. According to their framework this category consists of five dimensions: task hierarchy, task switch, task relevance, shared modality, and task contiguity. These dimensions are discussed for multiscreening below.

**Task hierarchy.** Task hierarchy focuses on the importance of the different tasks involved independent of whether the tasks are related or unrelated (Wang et al., 2015). When both tasks are of equal importance it is more difficult to process (i.e., encode or store) both messages. However, when one task has a higher priority, more cognitive resources will be allocated towards this task and the message on this task will be better processed (Dijksterhuis & Aarts, 2010). When people multitask with TV, this medium is often used as a background medium (e.g., Papper, Holmes, & Popovich, 2013; Pilotta, Schultz, Drenik, & Rist, 2004). This would imply that, during multiscreening, more cognitive resources are allocated towards the task/message on the second screen device. However, an eye-tracking study about multiscreening found that about two-third of people's viewing time is directed towards the TV. Attention towards the second screen device increased during the commercial break on the TV or during pushes (e.g., pop-ups, sounds) on the second screen device. Most attention was devoted towards the second screen device during the commercial break on the TV in combination with

pushes on the device (Holmes et al., 2012).

**Empirical Research.** Research on task hierarchy and media multitasking showed a difference in the processing of the message depending on task hierarchy. A study to reading performance found that when people had to read an educational message with TV as *background medium*, they performed better than when people had to read the same message while watching a video *simultaneously* (Lin, Robertson, & Lee, 2009). In addition, Jeong and Hwang (2012) manipulated a form of task hierarchy by asking the participants to focus mainly on the TV or a text. They found that the persuasive message in the text was better comprehended when people had the primary focus on the text, than when people had the secondary focus on the text (and the primary focus on the TV). In addition, they found that when people focused primarily on the text, people performed just as well as when they were only reading the text.

This has important implications for persuasive messages while multiscreening. Because the focus during a commercial break is more likely directed to the second screen device, it is likely that the message, such as an advertisement, on the second screen device will be better encoded and stored than the message on TV. It is even possible that the message on the second screen device will be equally well processed as when people would be single tasking. Thus, the assumed decrements in performance might not be present for the message with the primary focus of attention. Future research should empirically examine if this also holds for an advertisement while multiscreening and if this is the case for both media involved in multiscreening. Thus, is it also possible to process an advertisement on the TV, while multiscreening, in the same way as when you would be single tasking by manipulating the focus of attention or task hierarchy?

**Task switch.** Task switch is the control people have over switching (Wang et al., 2012). Switching can be seen as directing both visual and cognitive attention from one task/message to another. Thus, this dimension entails to what extent consumers have control over the allocation of their cognitive resources and the control of switching the allocation of resources between tasks/messages. In the media multitasking literature it is found that people switch a lot while using multiple media. A study into switching while media multitasking with TV and a computer found that people switch on average more than 4 times per minute (Brasel & Gips, 2011). Another study, which examined media multitasking within a personal computer, showed that people switched every 19 seconds (Yeykelis, Cummings, & Reeves, 2014). The effects and costs of switching may differ on the nature of the switches, such as the amount of control over the switches.

In general, a distinction can be made between internal and external switches (Adler & Benbunan-Fich, 2012; Benbunan-Fich et al., 2011). Internal switches are caused by



a consumer's own choice, and therefore, consumers have more control over these kind of switches. Internal switches can be caused by cognitive or affective processes. Internal switches related to cognitive processes may be caused when someone needs a mental break, gets a reminder about another task, (Jin & Dabbish, 2009 in Adler & Benbunan-Fich, 2013), a task is (temporarily) no longer rewarding or the (sub)task is completed (Payne, Duggan, & Neth, 2007). Internal switches may also be caused by affective processes, both positive and negative feelings can play a role. A negative feeling can be for example frustration, obstruction or exhaustion and a positive feeling can be exploration, stimulation, and reorganization (Adler & Benbunan-Fich, 2013). The findings of the study of Adler & Benbunan-Fich (2013) showed that positive triggers were correlated with good performance (e.g., solve a set of puzzles), and negative triggers with more self-interruptions and bad performance. Thus, for multiscreening it is important that internal switches are triggered by positive feelings to enhance advertising effectiveness. For example, a second screen application belonging to the TV content should not be too difficult (e.g., could lead to frustration) or too easy (e.g., could be boring). However, there is only limited research on the topic of task switching, control, multiscreening and advertising effects. Future research should examine what the effects of task control are in an advertising context.

External interruptions are caused by environmental cues, for example media content that provide stimuli that grab the attention of people, such as a ringtone or a beep when people receive a text message. Thus, technology itself produces stimuli to attract attention, with reminders, alerts, pop-ups, etc. (Carrier, Rosen, Cheever, & Lim, 2015). In addition, media also have features that incite multitasking behavior, such as loading times on computer (Foehr, 2006) and commercial breaks on TV (Rojas-Méndez, Davies, & Madran, 2009). However, it is not known what the effects are of these interruptions on advertising. Further research is needed to examine the effect of these external interruptions on advertising effects while multiscreening.

**Task relevance.** Task relevance is about the goals of the different tasks (Wang et al., 2015). For example, when you are watching TV and you are banking on your smartphone both tasks have a different goal. The first task has probably a more entertaining goal and the second task (banking) has a more informative/financial goal. Although multiscreening consists of two different tasks, these tasks may serve an overarching goal when a second screen application belongs to the TV content (e.g., TV show or commercials), for example the goal might be to entertain or persuade the consumer. An overarching goal is less cognitive demanding, than media multitasking with tasks containing separate goals.

The theory of threaded cognition (Salvucci & Taatgen, 2008, 2011) states that people

have different cognitive threads for different goals. When people have to perform different tasks with different goals (i.e., each with a different thread), these threads will compete for the same cognitive resources. However, in the case of multiscreening the tasks don't have to compete for the same thread. A lot of second screen devices are good examples of application which serve an overarching goal with the TV content. Second screen applications are often developed for a special program and are developed to accomplish an overarching goal. In terms of advertising an example is the STER application in the Netherlands. This application offers people the possibility to request premiums or to get additional information about the product/brand shown in the TV commercial break. The application operates simultaneously with the TV content. Thus, when a product is shown you can get additional information about this product. Both the commercial and the second screen application have the goal to persuade or inform the consumer.

In addition to a second screen application that is relevant to the TV content another possibility may be synced advertisement. Synced advertising is showing a message on a second screen device simultaneously with relevant TV content (or other medium) with the aim to persuade the consumer. For example, when a celebrity is interviewed in a talk show and he talks about a holiday in Spain, it is possible to show at that moment on the second screen device an ad for a trip to Spain. Thus, the advertiser can immediately react upon relevant content for his product/brand.

**Shared modality.** One of the differences of multiscreening with most other forms of media multitasking are the concurrent modalities of the media. The term 'multiscreening' already indicates that there are multiple screens involved, which in turn implies at least two media that are visual. For example, when you watch TV and use a second screen device, both media have information that is presented visually. Structural interference will occur when information is processed through the same sensory channel (Kahneman, 1973). Where other forms of media multitasking have to deal with capacity interference because of the limited cognitive capacities (Jeong & Hwang, 2015; Kahneman, 1973; Lang, 2000), multiscreening also 'suffers' of structural interference (Jeong & Hwang, 2015).

**Dual-channel paradigm.** According to the dual-channel paradigm, people have different channels to process visual and auditory information (Baddeley, 1997; Paivio, 1986; Wickens, 2002). The dual coding theory (Paivio, 1986) states that people process information through two unique systems which are interconnected. The first system is used to process verbal information, and the second system is used to process non-verbal information (i.e., imagery system). Both systems can be active on their own, but they can also be active at the same time. Another dual process

theory is the multiple resource theory (Wickens, 2002). This theory states that people have different 'pools' to process audio and visual information. Greater interference is caused when two tasks have concurrent modalities (e.g., both visual), than when two tasks have different modalities (e.g., audio and visual), because the tasks with concurrent modalities have to be processed through the same pool. This will result in decrements in performance when people are multiscreening. In addition, the cognitive theory of multimedia learning suggests that people learn better from information presented in multiple modalities (Mayer, 2005). Thus, consumers should remember advertisements better when they are presented in multiple modalities.

**Empirical research.** In the media multitasking literature, there is one study that specifically focusses on media multitasking with different modalities and the effects of a persuasive message (Jeong & Hwang, 2015). This study showed that people who had to read a persuasive text and combined it with visual advertising messages scored significantly lower on comprehension of the text, than people who combined the text with audio advertising messages and people who were single tasking (Jeong & Hwang, 2015). Thus, people in the concurrent modality condition scored the lowest on comprehension.

In addition, there is one study that examined the effects of different modalities of a message and the effects on advertising recall and recognition (Jensen, Walsh, Cobbs, & Turner, 2015). The results of this study showed that in a single tasking situation audiovisual information outperformed both audio only and visual only information on both recall and recognition. Thus, people who were exposed to audiovisual information scored higher on both recall and recognition than those who were exposed to only visual or only audio information. As a follow up, they tested single tasking compared to multiscreening (e.g., text messaging about the event). The results showed that brand recall was lower in all second screen conditions (i.e., audiovisual, audio only, visual only), than in all single tasking conditions. However, for recognition they found that people performed as good in the audiovisual multiscreening condition as in the single tasking condition.

**Task contiguity.** Task contiguity entails the physical closeness of the different tasks. For multiscreening it is required that the TV and the second screen device are present in the same room. However, the physical closeness differs each time and could even differ while they are used. It is unknown what the effects of task contiguity are on advertising while multiscreening. Future research could examine whether the physical closeness matters. Because of the shared modality (see Shared modality), it is possible that some distances require, for example, more head movements. This could have implications for research that sometimes examine multiscreening with a split screen on a computer (e.g., Van Cauwenberge et al., 2014) and sometimes use a more real-life situation with an actual TV and second screen device (e.g., Segijn et al., 2016).

### Task Inputs

A second category of the multi-dimensions of media multitasking of Wang et al. (2015) is task inputs. Task inputs is about the media content and format. The dimensions belonging to this category are: information modality, information flow and emotional content.

**Information modality.** Information modality is about the different modalities within one medium (Wang et al., 2015). For example, a newspaper is mainly visual, TV content is – in general - audiovisual, and gaming also includes the motor modality. These three modalities – visual, auditory, and motor – are most relevant in media multitasking research (Salvucci & Taatgen, 2011; Wickens, 2002). The more modalities a screen has, the more likely it is that there will be overlap in modality with another screen. In addition, overlap in modalities will lead to structural interference (See also Shared Modality; Salvucci & Taatgen, 2011; Wang et al., 2015).

**Information flow.** A second dimension of task inputs is the flow of the information. The information flow can either be internally or externally paced. When information is internally paced people have control over the information flow, how long they want to pay attention to the message, and the order of the messages. This is for example possible when consumers use their smartphone or tablet. In addition, with externally paced information consumers have no control over the information flow and they can only attend to the information at the moment of presentation (Wang et al., 2015). An example of an externally paced medium is a TV. Although this is not completely true nowadays with the recent developments with interactive TV possibilities where people could pause or forward TV content and TV on demand. However, the medium TV is more externally paced than for example a smartphone, because broadly speaking the order and pace is predetermined. As a result, consumers have less opportunity to process the information of an advertisement presented on TV. The comprehension of the message will be increased when consumers have more control over the pace of the message (MacInnis, Moorman, & Jaworski, 1991). Therefore, it is recommended to show more complex messages on media where consumers have more control over the message and easy to process messages on media with external pace.

In the case of multiscreening, the TV is a more externally paced medium. Therefore, consumers have less possibilities to process the advertisement presented on TV. In addition, the second screen device is a more internally paced medium. However, the pace of second screen devices depends on the task. When consumers are searching for information themselves, they have control. However, the control will be less when, for example, a branded app of a program/commercial break is shown. A branded app is "software downloadable to a mobile device which prominently displays a brand

identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience” (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011, p. 191). In this case, the pace may be predetermined by the app developer.

An example of a second screen app that consumers can use during a commercial break is the previously mentioned STER application (see Task relevance). In this case, the pace is decided by the medium, because it operates simultaneously with the TV content. However, this application has the opportunity to stay longer on a message in the application or to look back to previously shown products/brands. Then the consumer has more control over the pace.

In addition, consumers sometimes use a second screen device to look up relevant information to the TV content (SKO, 2012). This knowledge could be incorporated in traditional TV commercials. For example, by showing a link in the TV commercial may make it easier for consumers to look up relevant information. In this case, consumers have the opportunity to look up further information on their own pace, while initially the information was offered on a more externally paced medium (e.g., the TV).

**Emotional content.** Emotional content is about what content is shown on the media. Is the content positive or negative (i.e., valence) and is it arousing or calm (i.e., intensity. Wang et al., 2015). This is not a specific characteristic of multiscreening and can also differ for each time you watch TV and use a second screen device. However, it is still a dimension to take into account. Emotional arousing content, for example, can attract attention. Thus, when consumers are multiscreening and they focus on the second screen device, an advertisement which is arousing could direct the attention towards the TV. In general more arousing content also leads to more resources allocated towards this content (Lang, 2000; Wang, Lang, & Bussemeyer, 2011). Thus, the advertisement in the example will be processed with more cognitive resources. This could have implications for how the message is processed (see also Task hierarchy).

### Task Outputs

A third category of the multi-dimensions framework is task outputs. This category is about how the nature of multiscreening affects how messages are processed. Two dimensions belong to this category: behavioral responses and time pressure.

**Behavioral responses.** Behavioral responses are about the activity required by the user. Thus, does the task involve any behavioral responses of the user? As previously mentioned, the TV is often used as a background medium (e.g., Papper et al., 2013; Pilotta et al., 2004) and is also characterized as a ‘lean back’ or passive medium. This traditional medium does not require any explicit behavioral responses of the user. However, a second screen device requires more behavioral responses and is a so-

called 'lean forward' or active medium. More behavioral responses add more complex dynamics to media multitasking. Requiring behavioral responses generally also imply demining more resources. Future research could examine how behavioral responses during multiscreening affects advertising effectiveness.

**Time pressure.** Time pressure may have an influence on the performance of multiscreening, for example by influencing the decision making process and deterring the speed versus accuracy tradeoff (Wang et al., 2015). Most of the time multiscreeners will not experience a specific time pressure, for example when consumers look up information on the internet (un)related to the TV content or when they follow/post on Twitter during a TV show. However, there are some examples in which a time constraint is present. This may be caused by the information flow (see Information flow). For example some second screen applications allow users to play along with a TV quiz. Most of the time the user has a limited amount of time to answer questions. This feeling of time pressure could increase levels of stress, which in turn could lead to a decrease in performance (Wang et al., 2015).

It is argued that tasks with high time pressure are less often combined with other tasks (Wang et al., 2015). A reason could be that tasks with higher time pressures require more capacity allocation and, therefore, there are less capacities left for a second task (see also Task hierarchy). A study to media multitasking and advertising found a positive effect of media multitasking on ad evaluations mediated by perception of time (e.g., Chinchanchokchai et al., 2015). The more tasks involved, the faster the time seemed to pass for the participants. They argued that when people are media multitasking they have less cognitive capacities left to focus on time itself.

### User Differences

A final dimension indicated by Wang et al. (2015) is the individual differences between users. Effects of multiscreening may differ for individuals. These individual differences may serve as predictors or moderators of advertising effectiveness. However, there are only limited studies into demographical or psychological individual differences and the effects of multiscreening on advertising. Studies examining individual differences and media multitasking often focus on predictors of engaging in this behavior. This information could also be relevant for advertisers, because it may indicate what kind of people are combining what kind of media, and how often they use it. In other words, where can you find the target group of the campaign?

The literature on demographic predictors is consistent in finding age as a universal predictor of media multitasking behavior (Voorveld et al., 2014). Different studies indicated that, although all age groups multitask, younger people are more likely

to engage in media multitasking behavior (e.g., Carrier, Cheever, Rosen, Benitez, & Chang, 2009; Duff, Yoon, Wang, & Anghelcev, 2014; Voorveld et al., 2014; Voorveld & van der Goot, 2013). In addition, a popular assumption is that women engage more in media multitasking behavior than men. In studies in which multitasking with a media and non-media activity was examined, the results indeed showed that women were more likely to combine these kind of activities (Duff et al., 2014; Hwang, Kim, & Jeong, 2014; Jeong & Fishbein, 2007). Furthermore, there is some evidence that education (Hwang et al., 2014; Kazakova, 2014; Voorveld et al., 2014) and income (Hwang et al., 2014; Voorveld et al., 2014) might also predict of media multitasking behavior. However, education and income appeared to be only predictors in a limited number of cases in specific contexts and the results are mixed. To make further inferences about these demographic predictors more research is needed in this field.

In addition to demographic predictors, some studies also examined some psychological predictors. For example, it was found that people who score high on sensation seeking are more likely to engage in multitasking activities, than people who score low on sensation seeking (Duff et al., 2014; Jeong & Fishbein, 2007; Kononova, 2013; Sanbonmatsu, Strayer, Medeiros-Ward, & Watson, 2013). In addition, it was found that the people who score high on neuroticism (Wang & Tchernev, 2012), impulsivity (Sanbonmatsu et al., 2013), materialism (Kazakova, 2014) or people who perceive themselves as more creative (Duff et al., 2014) or are early adapters of new technologies (Kazakova, 2014) are more likely to engage in media multitasking behavior.

Some psychological predictors of media multitasking were examined in an advertising context, such as perceived ad utility and processing style. People who perceive ads as more useful are more likely to engage in media multitasking (Duff et al., 2014). This indicates the importance of taking media multitasking into account for advertisers. Finally, a study to the effects of processing style and ad recognition found that people with an analytic style (i.e., focus on specific items) showed decreased ad recognition when media multitasking compared to single tasking. In addition, people with a holistic style (i.e., orientation toward the relationship between objects and the field) did not show a decrease in ad recognition (Duff & Sar, 2015). Other factors that were but did not appear to predict of media multitasking behavior were parental education (Jeong & Fishbein, 2007; Kononova, 2013), extraversion (Wang & Tchernev, 2012), cognitive failure, and imagination (Duff et al., 2014).

## MULTISCREENING: CHALLENGE OR OPPORTUNITY FOR ADVERTISERS?

In the previous section the multi-dimensions of multiscreening were described. Based on this typology of multiscreening predictions can be made about what factors could hinder or facilitate processing and therefore advertising effectiveness. As mentioned in the beginning of this chapter media multitasking is often associated with decrease in persuasion, but is multiscreening only a challenge for advertisers or could it also be seen as an opportunity?

A challenge of multiscreening is that consumers have to divide their attention between multiple tasks. Therefore, the opportunity to process the advertisement will decrease. Especially with concurrent modalities and a more externally paced medium these opportunities to process the message are lower than in some other media multitasking situations or when consumers are single tasking. Therefore it is important for advertisers to take these dimensions into account.

Although multiscreening generates some challenges for advertisers, also some new opportunities arise. A second screen device offers the possibility to expose consumers also via this medium to an advertisement, for example through a branded app or synced advertising. In addition to 'simply' advertising twice, a second screen device can also be used to search for related information by consumers, for example when they want to know more about the advertised product or they can even immediately purchase it.

Although this chapter outlines some challenges and opportunities, it should be acknowledged that, with the current knowledge, it is difficult to estimate what the outcomes of multiscreening will be. There is still little knowledge about this phenomenon and also not much is known about the co-occurrence of the multiple dimensions. Future research is needed to provide a broader understanding of this phenomenon and the consequences for advertising effectiveness.

Multiscreening offers, besides its limitations, also new possibilities. In addition, it is expected that the prevalence of multiscreening will only increase in the years to come. Therefore, multiscreening is a phenomenon to take into account when thinking about advertising strategies. This chapter offers a steppingstone for both practitioners and scientist in the field of advertising. The typology of multiscreening can be used as an overview of the challenges and opportunities for advertisers and as a start for future research in the field of multiscreening and advertising effectiveness.



Table 2.1 Summary dimensions per category applied to multiscreening.

Categories	Dimensions	+ / 0 / - <sup>a</sup>	Dimensions applied to multiscreening	Empirical research per dimension
Task relations	Task Hierarchy	0	The message with the highest priority is better processed than the task with the lowest priority. TV is often used as a background medium. By attracting attention towards this medium the focus will shift and the message presented at that moment will be better processed.	Jeong & Hwang (2012), Lin et al. (2009)
	Task Switch	0	Internal interruptions: Switching doesn't have to be negative as long as they are triggered by positive feelings (e.g., exploration, stimulation) and not because of negative feelings (e.g., frustration, boredom). External interruptions: Commercial breaks on TV could induce multiscreening behavior. Stimuli that induce switching in second screen devices can be sounds (e.g., ringtone, beep) or pop-ups.	Adler & Benbunan-Fich (2013), Brasel & Gips (2011), Yeykells et al. (2014)
	Task relevance	+1	The tasks/messages involved in multiscreening may serve an overarching goal what is less cognitive demanding than having two different goals and the messages will therefore be better processed.	Angell et al. (2015), study 1 of Kazakova et al. (2016), Van Cauwenberge et al. (2015)
	Shared modality	-1	Both media (TV and second screen device) have concurrent modalities (both visual). This leads to structural interference.	Jensen et al. (2015); Jeong & Hwang (2014)
	Task contiguity	0	The physical closeness of the TV and the second screen device may differ each time people are multiscreening and may even differ within a time they are used.	-
Task inputs	Information modality	-1	The more modalities a screen has, the harder it may be to combine it with another screen.	-
	Information flow	0	A TV is a more externally paced medium and a second screen device a more internally paced medium. When consumers have more control over the pace the opportunity to process the advertisement is higher.	-
	Emotional content	0	Emotional content can attract attention to one or the other medium.	Wang et al. (2011)

Table continues on next page.

Table 2.1 (Continued).

Task outputs	Behavioral responses	+1	More behavioral responses require more cognitive resources. TV requires in general a low level of behavioral responses, but the second screen device requires more behavioral responses.	-
	Time pressure	0	When people are multiscreening time seem to pass faster and therefore they will have a more positive evaluation of the ad.	Chinchanachokchai et al. (2015)
User differences	User differences	-	<ul style="list-style-type: none"> <li>- Younger people are more likely to multitask</li> <li>- Other predictors are gender, education, and income</li> <li>- Sensation seekers, neuroticism, and creativity are found to be psychological predictors of multitasking behavior</li> <li>- Processing style has an influence on ad recognition</li> </ul>	e.g., Carrier et al. (2009), Duff & Sar (2015), Duff et al. (2014), Jeong & Fishbein (2007), Voorveld et al. (2014), Voorveld & van der Goot (2013)

Note. The categories and dimensions are based on the multi-dimensions of Wang et al. (2015).

<sup>a</sup> Values are based on the coding scheme of Wang et al. (2015) (available on the journals website). In general, +1/-1 indicate relatively high/low levels of the dimension and 0 indicate ambiguous presence.