Does Multitasking Increase or Decrease Persuasion? Effects of Multitasking on Comprehension and Counterarguing

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This study examined the effects of multitasking on persuasion, including comprehension and counterarguing of persuasive messages, which were presented in three different contexts: (a) nonmultitasking with full attention paid to the message, (b) multitasking with primary attention paid to the message, and (c) multitasking with secondary attention paid to the message. Consistent with predictions, the results suggested that multitasking reduced the actual and perceived levels of comprehension and also reduced counterarguing. The implications for research on persuasion are further discussed.


Introduction

Previous studies using survey methods to examine media effects have often used media exposure as the independent variable (e.g., Bartels, 1993; Bissell & Zhou, 2004; Gerbner, Gross, Morgan, & Signorielli, 1980). The studies have typically assumed that audiences pay attention to a single medium when they are exposed to the content. However, audience behaviors in the contemporary media environment often involve the use of (a) a medium with nonmedia activities (e.g., television with work) or (b) two or more media (e.g., television and the Internet). The former is referred to as media multitasking, whereas the latter is referred to as multitasking with multiple media (Jeong & Fishbein, 2007). Multitasking has become an increasingly prevalent audience behavior in the contemporary media-saturated environment.

Multitasking is particularly important for research on media effects in that multitasking can moderate the effects of media on audiences. In other words, the media can have different effects when audiences multitask with a medium compared

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to when they use a single medium. Specifically, multitasking can decrease the persuasive effects of a medium by reducing attention to and comprehension of the content, whereas it can increase media effects by suppressing counterarguing of the content (Collins, 2008).

Longitudinal studies considering multitasking have found that multitasking may play an important role in media effects. Collins’s (2008) study focused on a specific type of multitasking (television–Internet) and found increased media effects when multitasking, whereas Jeong, Hwang, & Fishbein’s (2010) study considered various types of multitasking and found decreased media effects when multitasking. These findings suggest that the type of multitasking may play an important role in media effects.

Previous multitasking research using experimental methods has provided somewhat conflicting results. Although a number of studies have found that multitasking may disrupt information comprehension or recall (Armstrong & Chung, 2000; Armstrong, & Greenberg, 1990; Armstrong & Sopory, 1997; Beentjes, Koolstra, & van der Voort, 1996; Bowman, Levine, Waite, & Gendron, 2010; Pool, Koolstra, & van der Voort, 2003a, 2003b; Pool, van der Voort, Beentjes, & Koolstra, 2000; Zhang, Jeong, & Fishbein, 2010), some studies have suggested the possibility that multitasking can increase information acceptance by reducing one’s ability to process information critically and generate counterarguments for counterattitudinal messages (Baron, Baron, & Miller, 1973; Gilbert, Tafarodi, & Malone, 1993; Keating & Brock, 1974; Petty, Wells, & Brock, 1976). These results suggest that multitasking effects can vary depending on whether the focal outcome is information comprehension or information acceptance.

The present study examines the role of multitasking in persuasion by considering both information comprehension and acceptance. To test the role of multitasking in persuasion, this study tests whether the effects of persuasive messages vary by three levels of multitasking: (a) nonmultitasking with full attention paid to the message, (b) multitasking with primary attention paid to the message, and (c) multitasking with secondary attention paid to the message. Less (or secondary) attention may decrease persuasion by reducing comprehension or it may increase persuasion by suppressing counterarguing.

Media multitasking as an audience behavior

The prevalence of multitasking has been well documented in the Middletown Media Studies (Holmes, Papper, Popovich, & Bloxham, 2005; Papper, Holmes, & Popovich, 2004) using survey, diary, and observation methods. These studies have suggested that almost all audiences (more than 90%) in the United States multitask with media in some way and that approximately half of one’s media day involves some form of multitasking.

When audiences multitask, they tend to engage in specific types of multitasking. The Middletown Media Studies have suggested that activities such as meal
preparation, eating, and housework are frequently combined with radio and television and that work is frequently combined with radio and the Internet. With regard to multiple-media multitasking, (a) audio media and the Internet and (b) television and the Internet are the most popular combinations among adults (Holmes et al., 2005; Papper et al., 2004) as well as among youth (Foehr, 2006; Roberts, Foehr, Rideout, & Brodie, 1999; Roberts, Foehr, & Rideout, 2005).

Previous studies have examined the primary and secondary focus when multitasking. Jeong et al.’s (2010) diary study of teens and college students found that when audiences multitask, they consistently report that they devote more attention to their nonmedia activities (e.g., doing homework or eating) than to media activities (e.g., listening to music or watching TV). For multiple-media multitasking, the Internet is more likely than audio media to be the primary medium when audiences engage in audio–Internet multitasking. However, for television–Internet multitasking, some audiences use television as the primary medium whereas others use the Internet as the primary medium.

The primary–secondary distinction is important in that media effects may vary depending on whether the medium of interest is the primary or the secondary medium. The quality of media exposure is likely to be lower when audiences multitask than when they focus on a single medium. In fact, a number of previous studies on the effects of multitasking have suggested that multitasking disrupts information processing (Bowman et al., 2010; Pool et al., 2003a, 2003b; Zhang et al., 2010). However, these studies did not consider the primary–secondary aspect of multitasking. Multitasking may reduce information processing (e.g., comprehension and counterarguing) particularly when the medium is used as the secondary medium. This is because when the medium is the secondary focus, it receives less attention than when it is the primary focus of attention. However, it is not yet clear how much information is lost when audiences use a medium as the primary or secondary focus.

First, it is possible that there is a linear decrease in information processing, that is, the effect of a medium is greatest when there is no multitasking, followed by when it is used as a primary medium, and when it is used as a secondary medium. Second, it is possible that the distinction between the use of a medium as a single medium (nonmultitasking) and a primary medium may be important but that between the use of a medium as a primary and a secondary medium may be less important. This is plausible if the simple presence of a distractor reduces information processing. Third, it is possible that the use of a medium as a single or a primary medium may make little difference, but the distinction between the use of a medium as a primary and a secondary medium is important. This is plausible in that audiences pay considerable attention to a medium when it is their primary focus. In this regard, this study examines the effects of multitasking by considering the primary–secondary aspect of multitasking.

Previous studies on the effects of multitasking focused more on outcomes related to message comprehension and recall than on outcomes such as counterarguing.
and acceptance. When audiences multitask, the extent of inhibition in information processing may be different by the type of outcome (e.g., comprehension vs. counterarguing). While multitasking can reduce comprehension, it may increase message acceptance by suppressing counterarguing. Thus, the present study considers various outcomes to examine the role of multitasking in persuasion.

Multitasking and persuasion

Elaboration likelihood model
The elaboration likelihood model (ELM) of persuasion (Petty & Cacioppo, 1986) posits that information recipients may process information either centrally or peripherally. Although information recipients may change attitudes based on cues irrelevant to the core content of the message (i.e., peripheral processing), a stable and persistent attitude change is expected when audiences accept the message after extensive thinking and careful scrutiny of the message (i.e., central processing). The model suggests that audiences are likely to engage in central processing when they have the ability and motivation to process information. Distraction may limit one’s ability to process information in terms of comprehension as well as counterarguing.

Reduced comprehension
The rationale underlying the negative impact of multitasking on comprehension is the limited-capacity model of information processing (Kahneman, 1973; Lang, 1995, 2000; Lang, Borse, Wise, & David, 2002). The model posits that information recipients have a finite amount of processing resources with which they process information. Thus, when audiences multitask with media, limited cognitive resources need to be allocated to multiple tasks (e.g., watching television and doing homework). Information recipients may not be able to process information beyond the amount of cognitive resources that they have. In fact, previous research on media multitasking has suggested that multitasking can disrupt not only task performance (e.g., Bowman et al., 2010; Pool et al., 2003a, 2003b) but also the processing of media content (Zhang et al., 2010).

Although multitasking is likely to result in information loss, the extent of this loss may depend on the cognitive load involved in the task. Some types of multitasking involving increased competition for cognitive resources (e.g., television-homework) may result in greater information loss than other types of multitasking (e.g., television-eating). In addition, previous research has suggested that the distraction effects of multitasking may be minimal when individuals are performing nondeclarative or habit-learning activities (Foerde, Knowlton, & Poldrack, 2006) or skilled tasks (Schumacher et al., 2001).

Despite some situational factors, multitasking is likely to reduce comprehension. The disrupting role of multitasking in information comprehension is more likely to occur when the medium is the secondary focus of attention than when it is the primary focus. Thus, the following hypothesis is proposed.
H1: Multitasking will reduce comprehension. A persuasive message presented in a single medium (non-multitasking) will result in the highest level of comprehension, followed by a message presented in the primary medium when multitasking. A message presented in the secondary medium when multitasking will result in the lowest level of comprehension.

Reduced counterarguing
It is reasonable to expect that multitasking reduces media effects through reduced comprehension. However, under some circumstances, it is possible that multitasking can increase persuasion through reduced counterarguing and increased acceptance (Baron et al., 1973; Festinger & Maccoby, 1964; Gilbert et al., 1993). The counterarguing inhibition hypothesis (Keating & Brock, 1974) and the thought disruption hypothesis (Petty et al., 1976) have suggested that distraction can decrease counterarguing, which leads to increased acceptance of persuasive messages. In the experiment of Keating & Brock (1974), they manipulated distraction by asking participants to monitor flashes of light while listening to a persuasive message advocating a tuition increase. Compared to the no-distraction condition, the researchers found that the participants made fewer counterarguments in the low-distraction condition in which there were 10 light flashes per minute, and they made the fewest counterarguments in the high-distraction condition in which there were 25 light flashes per minute. This suggests that not only the presence of distraction but also the degree of distraction influences the amount of counterarguing. Petty et al. (1976) further suggested that distraction enhanced persuasion when the message was easy to counterargue rather than when it was difficult.

Because multitasking involves distraction, multitasking may result in greater persuasion by limiting audiences’ ability to present counterarguments to the message. Prior distraction studies using flashes of light have a limitation in that light flashes contain minimal information that needs to be processed, compared to the information (e.g., television, radio, or homework) that would be processed in a real-world multitasking situation. Although multitasking involves distraction, multitasking includes dual and complex message processing beyond simple distraction. More importantly, multitasking effects may depend on the level of attention (i.e., primary vs. secondary), which has rarely been tested in prior distraction studies. On the basis of prior research, the following hypothesis is proposed.

H2: Multitasking will suppress counterarguing. A persuasive message presented in a single medium (non-multitasking) will result in the highest level of counterarguing followed by a message presented in the primary medium when multitasking. A message presented in the secondary medium when multitasking will result in the lowest level of counterarguing.

Methods

Design
This study used a three-group experimental design, including two multitasking groups and a non-multitasking group. The participants in the three groups read
the same written persuasive message, which was presented in different contexts: (a) a single medium (the persuasive message only), (b) the primary medium (the persuasive message as the primary medium and a video as the secondary medium), and (c) the secondary medium (a video as the primary medium and the persuasive message as the secondary medium).

Participants
A total of 88 undergraduate students participated in this study. They were recruited from upper-level communication classes at a large private university in South Korea, and they received extra credit for their participation. The mean age of study participants was 22.70 (SD = 1.60) and 71% of the study participants were females. The participants were randomly assigned to one of the three experimental conditions: a single medium (n = 30), the primary medium (n = 25), and the secondary medium (n = 33).

Messages
The written persuasive message included arguments about three unrelated social issues in Korea: freedom of expression online (FOEO), Four Major Rivers Restoration Project (FMRRP), and wartime operational control (WOC).

Regarding FOEO, some may support absolute freedom of expression, whereas others may support some regulation. The message claimed that FOEO should be limited because excessive freedom can threaten public interest if false information is disseminated. A popular Korean blogger whose pen name was Minerva was mentioned as an example. He criticized the intervention of the Korean government in the foreign exchange market during the global economic crisis in 2008 by claiming that the government requested banks not to purchase dollars. This claim turned out to be false, and consequently, he was prosecuted. However, his prosecution provoked a fierce debate. His supporters viewed that his claims were generally reasonable, although some of his statements might have been false, whereas his opponents argued that those false statements led to considerable confusion in the foreign exchange market as a result of his popularity and influence.

Second, FMRRP aims to improve the water quality of Korea’s four major rivers: Han, Nakdong, Geum, and Yeongsan. Some have supported the project, whereas others have expressed concerns about its high cost (approximately $20–30 billion USD) and potential damage to ecosystems surrounding the rivers. The message argued that most of the citizens near the project area support the project because 80% of mayors and governors in the area support the project.

Finally, WOC is the authority to control the Korean military during wartime, which was transferred to the U.S.-led UN command during the Korean War in the 1950s. There has been intense debate over whether WOC should be returned to the Korean government in case of another war. Although WOC by the UN command may have some benefits, including increased support from the international community
in case of war, some have been concerned that it could threaten the sovereignty of the Korean government. The message about WOC claimed that there was no such threat by using the example of foreign coaches who took charge of the Korean national football team. These messages were selected from actual arguments found in the media.

Each persuasive argument could have been counterargued using the data and warrant components of Toulmin’s (1964) model of argumentation. According to Toulmin’s model, a claim is the position being argued for and the conclusion of the argument, the data are facts that support the claim, and the warrant is a statement that logically connects the data to the claim. The arguments used in the present study had some flaws in terms of the data and the warrant so that participants could counterargue the messages. Specifically, the claim, data, and warrant for the three messages were as follows.

1. FOEO
   
   **Claim:** Excessive FOEO should be regulated.
   
   **Data:** Minerva’s excessive freedom of expression was a clear and present danger to public interest.
   
   **Warrant:** Any clear and present danger to public interest should be regulated.

2. FMRRP
   
   **Claim:** The FMRRP is supported by most of the citizens residing in the project area.
   
   **Data:** An opinion poll suggests that more than 80% of mayors and governors in the area support the project.
   
   **Warrant:** This suggests that most citizens in the area support the project.

3. WOC
   
   **Claim:** WOC in the hands of the U.S.-led UN command does not necessarily threaten Korea’s sovereignty.
   
   **Data:** Korea employed many foreign coaches for its football team, and those coaches were not a threat to Korea’s football independence.
   
   **Warrant:** Because having foreign coaches was not a threat to Korea’s football independence, not having wartime operations control does not necessarily mean a threat to Korea’s sovereignty.

For the video message used in the multitasking conditions, a 4-minute segment was selected from the movie *Transformers*, because previous research (e.g., Foehr, 2006; Holmes et al., 2005) has documented that audiences frequently view visual messages (e.g., shows and movies on television), while reading print or written messages (e.g., newspapers or homework).

**Experimental procedure**

The experimental setting was a small classroom. Students participated in the experiment in small groups of 5–10. They were seated apart from one another and were asked to refrain from talking during the experiment. Participants in the multitasking conditions viewed the video message on a projector screen.
The nonmultitasking (i.e., single-medium) group was asked to focus on the print message presenting the persuasive arguments; no video message was shown to this group. The participants in this group were given the following instructions: “We want to know how well audiences can understand and respond to information in the media. Please read the text below for 4 minutes. Please pay attention to the text.” The multitasking group with the persuasive message as the primary medium was asked to pay attention primarily to the persuasive message. Specifically, the respondents were instructed as follows: “Some people watch television or videos while reading books or newspapers, which is called multitasking. We want to know how well audiences can understand and respond to information in the media when they multitask. Please read the text below for 4 minutes. Please pay attention to the text while watching the video.” The multitasking group with the persuasive message as the secondary medium was asked to pay attention primarily to the video message while reading the persuasive message. Specifically, the respondents were instructed as follows: “Some people watch television or videos while reading books or newspapers, which is called multitasking. We want to know how well audiences can understand and respond to information in the media they multitask. Please read the text below for 4 minutes. Please pay attention to the video while reading the text because you will be asked about the video content later.” The same video message was used for the two multitasking groups. After the print and video messages were presented, the participants were asked to fill out a questionnaire.

Measures

**Comprehension** was assessed using (a) a self-reported measure of perceived comprehension and (b) an open-ended measure of actual comprehension. Self-reported comprehension was measured by asking the participants to report the extent to which they understood the argument on a 7-point scale ranging from not at all (= 1) to very much (= 7). Perceived comprehension was averaged across the three issues (FOEO, FMRRP, and WOC) to create an index.

For the open-ended measure, the participants were asked to list the arguments and logic for each argument. Their responses were coded as either correct (1) or incorrect (0). Incorrect responses included an incorrect understanding of the claim or an apparent misunderstanding of the data. Two coders reviewed all the responses separately, and there was no discrepancy between the two coders’ evaluation (Cohen’s kappa = 1). The actual level of comprehension, like the perceived level of comprehension, was averaged across the three issues.

**Counterarguing** was also assessed using self-reported and open-ended measures. Self-reported counterarguing was measured based on two items adopted from Moyer-Guse & Nabi’s (2010) study. The participants were asked to report the extent to which they tried to find flaws in the presented arguments and the extent to which they actively counterargued those arguments on a 7-point scale ranging from not at all (= 1) to very much (= 7). The correlations between the two items
were moderate to high across the three issues (FOEO, \( r = .75 \), FMRRP, \( r = .89 \), WOC, \( r = .81 \)). The perceived level of counterarguing was averaged across the three issues.

For the open-ended measure, the participants were asked to list all the counterarguments related to the messages they read. Their responses were coded as incorrect, partially correct, or correct. Those responses that accurately identified the flaws in the data or the warrant were coded as correct (= 1), whereas those that counterargued yet could not accurately identify the flaws were coded as partially correct (= 0.5).1 Those responses that offered no counterargument were coded as incorrect (= 0). Those participants who did not counterargue because they stated that they agreed with the position advocated in the persuasive message were coded as missing. Two coders reviewed all the responses separately, and the intercoder reliability was acceptable (FOEO, Cohen’s kappa = .89, FMRRP, Cohen’s kappa = .98, WOC, Cohen’s kappa = .93). Those responses on which the coders disagreed were discussed to reach a consensus. The actual level of counterarguing, like the perceived level of counterarguing, was averaged across the three issues.

Perceived attention was measured as a manipulation check. The participants were asked to indicate how much attention they paid to the persuasive message on a scale of 0 (no attention) to 100 (full attention).

In addition to respondents’ age and gender, some background variables, including issue involvement, prior exposure to the persuasive arguments in the media, prior news use, and multitasking frequency, were measured. Issue involvement was measured by asking respondents how important they thought each issue was. Response options ranged from not at all important (= 1) to very important (= 7). The average level of involvement was relatively high (FOEO, \( M = 5.86 \), \( SD = 1.07 \), FMRRP, \( M = 5.94 \), \( SD = 1.12 \), WOC, \( M = 5.55 \), \( SD = 1.27 \)). Prior exposure to the issues in the media was measured by whether respondents had been exposed to the specific persuasive arguments presented in the study messages (pp. 12–13). Response options were yes or no, and only 3, 14, and 7% of the respondents had been exposed to the specific arguments for the FOEO, FMRRP, and WOC issues, respectively. Prior media use was measured by asking how many hours each respondent used media on an average day (\( M = 3.52 \), \( SD = 2.05 \)). Prior news use was measured by asking how many hours each respondent read, watched, or listened to the news media using print, audio, television, and online media on an average day (\( M = 1.06 \), \( SD = .56 \)). Finally, multitasking frequency was measured by asking how frequently respondents used other media or did something else while using a medium. Response options ranged from never (= 1), rarely (= 2), sometimes (= 3), often (= 4), and very often (= 5). The average frequency of multitasking was 3.53 (\( SD = .92 \)). There were no significant differences across the three experimental conditions in terms of these background variables. Thus, the randomization can be considered successful.
Results

Manipulation check
As a manipulation check, it was determined whether the multitasking group with the persuasive message as the primary medium (the primary-medium group) paid more attention to the persuasive message than the group with the persuasive message as the secondary medium (the secondary-medium group). A t-test showed that the primary-medium group ($M = 74.88, SD = 12.92$) paid significantly more attention to the message than the secondary-medium group ($M = 43.06, SD = 21.51$), and the difference was significant ($t = 6.99, p < .001$). In other words, the secondary-medium group reported that they paid less than half of their attention (43%) to the message, whereas the primary-medium group paid approximately three-fourths (75%) of their attention to the message. It was assumed that the nonmultitasking group paid full attention (100%). Thus, the manipulation can be considered successful.

Hypotheses testing
Effects on comprehension
H1 hypothesized that multitasking would reduce comprehension. H1 was tested by conducting two separate one-way analysis of variances (ANOVAs) for two outcomes: (a) self-reported, perceived comprehension and (b) open-ended, actual comprehension. The results indicate a similar pattern for both measures.

As shown in Table 1, with respect to self-reported comprehension, there was a main effect of multitasking on the perceived level of comprehension ($F(2, 84) = 11.05, p < .001, \eta^2 = .21$). As expected, the nonmultitasking group reported the highest level of comprehension ($M = 5.70, SD = 1.08$), followed by the primary-medium group ($M = 5.17, SD = 1.08$) and the secondary-medium group ($M = 4.39, SD = 1.14$). The results of Tukey’s honestly significant difference (HSD) post-hoc tests indicated that the difference between the nonmultitasking group and

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Single medium ($n = 30$)</th>
<th>Primary medium ($n = 25$)</th>
<th>Secondary medium ($n = 33$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>5.70 (1.08)$^a$</td>
<td>5.17 (1.08)$^a$</td>
<td>4.39 (1.14)$^b$</td>
</tr>
<tr>
<td>Actual</td>
<td>.94 (.13)$^a$</td>
<td>.87 (.22)$^a$</td>
<td>.71 (.31)$^b$</td>
</tr>
<tr>
<td>Counterarguing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>4.79 (1.19)$^a$</td>
<td>3.78 (1.43)$^b$</td>
<td>3.22 (1.44)$^b$</td>
</tr>
<tr>
<td>Actual</td>
<td>.80 (.21)$^a$</td>
<td>.71 (.29)$^{ab}$</td>
<td>.55 (.37)$^b$</td>
</tr>
</tbody>
</table>

Note: Cell entries are means with standard deviations in parentheses. Means that share the same superscript are not significantly different from each other.

*p < .05. **p < .01. ***p < .001.
the primary-medium group was not significant ($p = .18$), but that between the primary-medium group and the secondary-medium group was significant ($p = .03$).

In terms of the open-ended measure of actual comprehension, multitasking had an effect on the level of actual comprehension ($F(2, 84) = 8.16, p < .01, \eta^2 = .16$). As hypothesized, the nonmultitasking group showed the highest level of comprehension ($M = .94, SD = .13$), followed by the primary-medium group ($M = .87, SD = .22$) and the secondary-medium group ($M = .71, SD = .31$). Post-hoc tests indicated that the difference between the nonmultitasking group and the primary-medium group was not significant ($p = .47$), whereas that between the primary-medium group and the secondary-medium group was significant ($p = .03$).

Thus, H1, which hypothesized that multitasking would reduce comprehension, was generally supported. Both self-reported and actual levels of comprehension were lower in the secondary-medium group, compared to the primary-medium and nonmultitasking groups. This suggests that whether a medium is used as a primary or a secondary medium may affect the degree of comprehension.

**Effects on counterarguing**

H2 hypothesized that multitasking would suppress counterarguing. To test H2, two separate one-way ANOVAs were conducted. In terms of the effect on the self-reported measure of perceived counterarguing, the results provide support for the main effects of multitasking ($F(2, 84) = 10.43, p < .001, \eta^2 = .20$). As hypothesized, the nonmultitasking group reported the highest level of counterarguing ($M = 4.79, SD = 1.19$), followed by the primary-medium group ($M = 3.78, SD = 1.43$), and the secondary-medium group ($M = 3.22, SD = 1.44$). Post-hoc tests indicated that the difference between the nonmultitasking group and the primary-medium groups was significant ($p = .02$), whereas that between the primary-medium and secondary-medium groups was not significant ($p = .28$).

In terms of the open-ended measure of counterarguing, multitasking had a significant main effect ($F(2, 84) = 5.33, p < .01, \eta^2 = .12$). The nonmultitasking group showed the highest level of counterarguing ($M = .80, SD = .21$), followed by the primary-medium group ($M = .71, SD = .29$) and the secondary-medium group ($M = .55, SD = .37$). Post-hoc tests showed that the difference between the nonmultitasking group and the primary-medium group was not significant ($p = .51$) and that between the primary-medium group and secondary-medium group was not significant ($p = .13$), yet the difference between the nonmultitasking group and the secondary-medium group was significant ($p = .01$).

Thus, H2 which hypothesized that multitasking would suppress counterarguing was generally supported. The level of actual counterarguing was significantly different in the secondary-medium group compared with the nonmultitasking group, and the level of self-reported counterarguing was significantly lower in the multitasking groups compared with the nonmultitasking group. The results for self-reported counterarguing suggest that multitasking itself can inhibit counterarguing regardless of the degree of attention (primary vs. secondary).
Discussion

This study examined the effects of multitasking on persuasion, including comprehension and counterarguing. As hypothesized, multitasking reduced the level of comprehension, and at the same time it reduced counterarguing. In other words, both comprehension and counterarguing decreased during multitasking. However, in terms of comprehension, the difference between the two multitasking groups was greater than that between the nonmultitasking group and the primary-medium group. This suggests that paying minimal attention to the message (i.e., when used as the secondary medium) disrupts comprehension, not multitasking itself. Although multitasking may be considered a relatively homogenous audience behavior, this research suggests that, in terms of comprehension, how much attention one pays to a medium when multitasking (primary vs. secondary) is more important than whether one multitasks or not. This seems to occur because, when a medium is the primary focus, audiences pay considerable attention to the medium and are able to understand the information as much as when they are not multitasking.

On the other hand, in terms of counterarguing, the difference between the nonmultitasking group and the primary-medium group was greater than that between the two multitasking groups. This suggests that multitasking may inhibit counterarguing, even if the medium is the primary focus of attention. A somewhat different pattern for multitasking effects was observed when the outcome was counterarguing compared to when it was comprehension. This may be because counterarguing is a more difficult task than comprehension because counterarguing involves generation of counterdata or counterwarrants. Thus, a smaller degree of distraction (primary multitasking) may inhibit one’s ability to perform this task. Future research may examine differences in comprehension and counterarguing as a function of the degree of multitasking.

The extent of distraction in information processing in different multitasking contexts (i.e., the primary or secondary focus) has important implications for research on media effects. Few studies of media effects have considered the context in which a message is processed, that is, whether audiences pay full attention to a single medium or whether they multitask. In addition, previous studies on multitasking (Armstrong & Chung, 2000; Armstrong & Greenberg, 1990; Beentjes et al., 1996; Bowman et al., 2010; Pool et al., 2003a; Zhang et al., 2010) have typically viewed multitasking as a relatively homogenous audience behavior, although Pool et al. (2003b) examined attention in multitasking through observation. However, prior research has rarely examined the question of primary versus secondary medium in multitasking and the effects on comprehension and counterarguing. The present study has examined not only whether multitasking can result in a reduction in information processing but also the extent of this reduction by considering the level of attention paid when multitasking (i.e., the primary or secondary focus). Because the level of multitasking may influence the quality of message processing,
future research examining the relationship between media exposure and effects should distinguish audience behaviors by considering more elaborate categories (e.g., single-medium use, primary-medium use, and secondary-medium use) when measuring media exposure.

This study contributes to the multitasking literature by explaining the impact of multitasking on persuasion, including comprehension and counterarguing. Previous studies have reported both facilitating and inhibiting roles of multitasking in persuasion, and this study sheds some light on this issue by suggesting that multitasking can inhibit persuasion by decreasing comprehension but at the same time can facilitate persuasion by decreasing counterarguing.

This study has some limitations. First, the primary-attention condition in this study may be more relevant to distraction than to multitasking. Distraction refers to the case in which an audience intends to pay attention to medium A when medium B is also present, whereas multitasking refers to the case in which an audience pays attention to both medium A and medium B. In the case of distraction, there is a single processing goal (medium A), whereas there are dual processing goals for multitasking (media A and B). Thus, the primary-medium condition in this study is closer to distraction (the goal is to process the print medium when the video disrupts attention), whereas the secondary-medium condition is closer to true multitasking (the goal is to process the print medium while also processing the video medium). The distinction between distraction and multitasking could be an important issue because information loss may be greater in the context of multitasking, where there are dual processing goals, than in the context of distraction, where there is a single processing goal. In fact, this study suggests that there was a difference in comprehension between the primary-medium condition (i.e., distraction) and the secondary-medium condition (i.e., multitasking), whereas there was little difference between the nonmultitasking condition and the primary-medium condition (i.e., distraction). Future research could include a multitasking condition in which audiences can freely choose their primary vs. secondary medium to increase the ecological validity of multitasking effects and further test ideas such as selective exposure.

Second, this study is based on a sample of undergraduate students. One may argue that undergraduate students may not be an ideal sample to test the effects of persuasive messages regarding social issues. This is particularly true when the issues are of little or no interest to the participants. However, as indicated by the measures of involvement, the participants’ perceived issue importance was high across all three issues. This is because the issues received a considerable amount of media attention, and thus, participants may not only have had an interest in these issues but also may have had the ability to counterargue the messages regarding those issues. However, it should be noted that only a few students had been exposed to the specific arguments for each issue used in this study. In other words, students’ counterarguing of the arguments is unlikely to have been rehearsed before participating in this study. Although the participants’ involvement in the issues used in this study was high,
the type of involvement may be considered value-relevant involvement (see Johnson & Eagly, 1989). Future research may use issues that have high outcome-relevant involvement, such as the senior comprehensive exam issue used in many studies that have tested the ELM.

Third, this study did not include measures relevant to attitudinal or behavioral effects. Although this study examined comprehension and counterarguing, which are important outcomes relevant to persuasion, more distal outcomes of persuasion (e.g., attitude and behavior change) were not examined. This study would have provided a better understanding of the effects of multitasking on persuasion if it had examined a comprehensive set of outcomes, including attitudinal or behavioral measures as well as comprehension and counterarguing.

Fourth, the video message was viewed on a projector screen not on a television screen, and each group of participants viewed the video in small groups instead of individually. Although it was ensured that participants did not talk to each other, this setting may not be as controlled as an individual viewing environment. Thus, future research should test multitasking effects in a more controlled environment. However, it should be noted that prior research (e.g., Foehr, 2006; Holmes et al., 2005; Jeong & Fishbein, 2007) has suggested that a frequently performed type of multitasking is to interact with friends or family while watching television. Thus, the experimental setting in this study does not entirely lack ecological validity. Future research may examine multitasking effects using interaction with others (i.e., coviewing) as a type of multitasking.

Finally, the effects of multitasking on persuasion were tested by examining the effects of only one type of multitasking (i.e., reading a persuasive message while watching a video). Thus, future research should examine the role of multitasking in processing other forms of persuasion, such as advertising or health campaign messages that invite different levels of counterarguing. Counterarguing and reactance are important issues in health campaigns because they may result in campaign failure (e.g., Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003). It is possible that reactance may be reduced when audiences multitask.

Despite some limitations, this study contributes to the literature on persuasion and media effects by demonstrating the overall effects of multitasking on persuasion by considering both comprehension and counterarguing.

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Note

1 The distinction between correct and partially correct responses was based on the extent to which the counterargument accurately attacked the data or warrant components. For example, for the issue of FOEO, responses that were coded as correct included the
following: “Minerva’s excessive freedom of expression had little impact on public opinion” (counterdata) or “even if freedom of expression poses a clear and present danger to public interest, it does not necessarily have to be regulated” (counterwarrant). If the counterargument did not directly attack the data or warrant components of the message, then it was coded as partially correct. For example, partially correct responses included the following: “Minerva made valid predictions of the Korean economy” or “excessive freedom of expression may be regulated, but the regulation should not be too extreme.” Incorrect responses were mainly those that did not provide any counterarguments. The ANOVA results testing the effects of multitasking on counterarguing showed consistent patterns regardless of whether the open-ended measure of counterarguing was coded using two categories (correct vs. incorrect) or three categories (correct, partially correct, and incorrect).

References


一心多用是增加还是降低说服效果？一心多用对理解和反说服心理的影响

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【摘要】
本文研究在三种不同的情况下一心多用对说服的效果，包括对说服信息的理解和反说服心理：（a）所有的注意力都集中到信息上，没有一心多用（b）一心多用，但主要注意力集中在信息上，以及（c）一心多用，对信息仅次要的注意。本文的研究结果与预测相一致，表明一心多用降低了实际和感知上对信息的理解水平，并且也减少反说服心理。本文进一步讨论了研究结果对说服研究的影响。
Le multitâche augmente-t-il ou diminue-t-il la persuasion? Les effets du multitâche sur la compréhension et la contre-argumentation

Cette étude a examiné les effets du multitâche sur la persuasion, incluant la compréhension et la contre-argumentation face aux messages persuasifs qui avaient été présentés dans trois contextes différents : a) non multitâche, avec une attention complète donnée au message; b) multitâche, avec une attention principale donnée au message, et c) multitâche, avec une attention secondaire donnée au message. Conformément aux prédictions, les résultats suggèrent que le multitâche a réduit les niveaux réels et perçus de compréhension, en plus de réduire la contre-argumentation. Les implications pour la recherche sur la persuasion sont discutées.

Mots clés : multitâche, persuasion, attention, principal, secondaire, compréhension, contre-argumentation
Erhöht oder mindert Multitasking Persuasion? Die Wirkungen von Multitasking auf Verstehensleistung und Counterarguing

In dieser Studie untersuchen wir den Einfluss von Multitasking auf Persuasion unter besonderer Berücksichtigung von Verstehensleistung und Counterarguing gegenüber persasiven Botschaften, die in drei Kontexten präsentiert wurden: (a) Nicht-Multitasking mit voller Aufmerksamkeit auf die Botschaft, (b) Multitasking mit primärer Aufmerksamkeit auf die Botschaft und (c) Multitasking mit sekundärer Aufmerksamkeit auf die Botschaft. Im Einklang mit den Annahmen zeigten die Ergebnisse, dass Multitasking die tatsächliche und wahrgenommene Verstehensleistung vermindert und auch counterarguing reduziert. Implikationen für die Persuasionsforschung werden diskutiert.

Schlüsselbegriffe: Multitasking, Persuasion, Aufmerksamkeit, Primär, Sekundär, Verstehensleistung, Counterarguing
다중테스크가설득을증가시키는가감소시키는가?
이해와반대논쟁에있어서의다중테스크의효과들
요약

본연구는설득에대한다중테스크의효과들에대한연구로,
이는이해와설득적메시지들의반대논쟁을포함한다.
이들메시지들은세가지다른문맥에서표현되었는데,
첫번째는,메시지에대한철저한집중을보여주는비다중테스크,
두번째는메시지에대한주요관심을보여주는다중테스크,
그리고세번째는메시지에대한부차적인집중을가지는다중테스크이다.예상과일치하게,
다중테스크는이해의실체적이고인지적인수준을감소시키며반대논의도감소시키는것으로
나타났다.설득연구에대한합의들이논의되었다.
Incrementa la Multitarea o Decrece la Persuasión?
Los Efectos de la Multitarea sobre la Comprensión y la Contra-argumentación

Se-Hoon Jeong\textsuperscript{1}
Yoori Hwang\textsuperscript{2}

Resumen
Este estudio examinó los efectos de la multitarea sobre la persuasión, incluyendo la comprensión y la contra-argumentación de los mensajes persuasivos, los cuales son presentados en tres contextos diferentes: (a) sin multitarea prestando completa atención al mensaje, (b) de multitarea con atención primaria puesta en el mensaje, y (c) de multitarea con atención secundaria puesta en el mensaje. Consistente con las predicciones, los resultados sugieren que la multitarea reduce los niveles de percepción actuales y percibidos y reduce también la contra-argumentación. Las implicancias para la investigación sobre la persuasión son discutidas aún más.

Palabras claves: multitarea, persuasión, atención, primaria, secundaria, comprensión, contra-argumentación