



The effect of advertisement choice, sex, and need for cognition on attention

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ABSTRACT

A recent study showed that choice of advertisement content affected attention for female but not male viewers (Nettelhorst & Brannon, 2012). This study extended that work by assessing the effect of choice difficulty and the moderation of viewers' need for cognition (Cacioppo & Petty, 1982) on attention. Participants were either allowed or not allowed to choose which advertisement to watch after watching a television skit. Next, participants watched an advertisement and rated their amount of attention towards it. Results showed that males were not influenced by the choice manipulation, but females had significantly greater attention after making the difficult choice. Similarly, high need for cognition individuals were not influenced by the choice manipulation, but low need for cognition individuals had significantly greater attention after making the difficult choice. These results suggest that choice in of itself is not a sufficient means of increasing viewer attention towards an advertisement. Instead the choice must be between options which are attractive to the viewer. In addition, advertisement choice should be an effective marketing tool particularly for female viewers or those with low need for cognition in general.

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1. Introduction

One relatively recent form of web marketing allows web users to choose which advertisement to be exposed to. For example, individuals are typically exposed to multiple advertisements within a 30 min span when they stream video content online using websites such as hulu.com. Due to the exposure to advertisements on various websites, some companies (e.g. hulu.com) allow their viewers to choose which advertisements to watch. In comparison to past forms of marketing within the web or traditional media (e.g. television, radio, etc.), advertisement choice allows users to selectively expose themselves to persuasive material (Eagly & Chaiken, 1993, 2005; Hart et al., 2009; Jonas, Schulz-Hardt, Frey, & Thelen, 2001). This form of dynamic marketing is strikingly different from traditional forms of marketing which use a one size fits all approach or tries to predict interest in an advertisement using various factors (e.g. age demographics). Because of its contrast to tradition forms of marketing, the effects of advertisement choice on various persuasive processes is also likely to contrast somewhat with persuasive processes found through traditional means (Friedrich, Fetherstonhaugh, Casey, & Gallagher, 1996; Haugtvedt, Petty, & Cacioppo, 1992; Petty & Cacioppo, 1979, 1984; Petty, Cacioppo, & Heesacker, 1981; Petty, Cacioppo, & Schumann, 1983). However,

research assessing the effect of advertisement choice on persuasion processes such as attention, comprehension, yielding and retention (Hovland, Janis, & Kelley, 1953) or reception and yielding (McGuire, 1968) remains scarce.

When examining the effect of choice on various attitude constructs, multiple studies found that making a choice increases product desirability (Brehm, 1956) through dissonance effects (Festinger, 1957), can make attitudes toward the product more resistant to counterattitudinal information (Freedman & Steinbruner, 1964), and can increase positive attitudes toward a product (Schlosser & Shavitt, 2009). However, none of these choice manipulations reflect how web users typically experience choice in on-line marketing settings. Neither Brehm (1956) nor Freedman and Steinbruner (1964) used advertisements at all in their choice manipulations while Schlosser and Shavitt (2009) had viewers choose advertisements which varied in emphasizing different aspects of the same product. Schlosser and Shavitt also provided the choice through a company's website itself rather than a third party provider. For most viewers who watch various types of video content online through websites such as hulu.com or youtube.com, the choice cannot be attributed to the product's company itself and is usually between different types of products. Thus it is not known if the findings of these studies generalize when the choice of advertisement content reflects the choice made by viewers who watch video content online.

A more recent study examining the effect of advertisement choice on viewers' attention towards the advertisement found that choice increased the amount of attention for female viewers but

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not male viewers (Nettelhorst & Brannon, 2012). This study's manipulation of choice required participants to choose between different products specifically where the choice was not sponsored by or could be attributed to any of the products' brands/companies. The moderation of viewer sex was not surprising since some research suggest that the impact of choice in educational settings is moderated by the amount of interest in the topic where choice is allowed (Ackerman & Gross, 2006; Schwartz, 2004). A study conducted by Ackerman and Gross (2006) found that interest in the domain where choice was allowed moderated the effect of choice on desire and satisfaction of the item being selected (here a college academic minor option). Additionally Ackerman and Gross, as well as Schwartz (2004), made direct comparisons between choice in their educational settings and marketing settings. Thus interest in marketing contexts should moderate the effect of choice. Several studies demonstrate that females find shopping more desirable than males (Alreck & Settle, 2002; Dholakia, 1999), spend more time shopping and make better consumer decisions than males (Campbell, 1997; Miller, 1998), show larger affective and behavioral effects in advertising research (Anschutz, Engels, van der Zwaluw, & Van Strien, 2011; Moore, 2007; Okazaki, 2007), and find web advertisements more informational (Wolburg & Pokrywczynski, 2001). Thus viewer sex as a proxy for interest moderated the effect of choice in the advertisement choice context. However, the findings of Nettelhorst and Brannon (2012) leave many unanswered questions.

One important unanswered question is whether or not choice in of itself is a sufficient means of increasing attention for female viewers. Attention in this sense is defined as, "a concentration of mental activity (toward an object)" (adapted from Matlin (2005)). In Nettelhorst and Brannon (2012), choice was manipulated using no choice and choice conditions rather than varying the difficulty of the choice itself. Choice difficulty here is defined as the desirability of the products when viewers are presented with the choice. One potential issue with this research is the implication that choice in general leads to various positive outcomes when that might not be the case. One possibility exists that the effect of choice dissipates when the choice clearly favors one option (i.e. one attractive vs. one relatively unattractive option). This possibility seems supported by Brehm (1956) which found greater cognitive dissonance effects in his choice paradigm when the choice options became more similar to one another in desirability. Thus it is possible that a choice between options which have different amounts of desirability will not lead to the same change in attention as a choice between options with similar amounts of desirability. Thus its theoretical and practical importance led to its assessment in this study.

A second important unanswered question is whether or not the interaction of choice and viewer sex on attention is moderated by other individual difference variables. One prominent personality variable worth examination is need for cognition (Cacioppo & Petty, 1982) because of its predictive use in the marketing and persuasion literatures. Need for cognition as a construct is defined as an individual's intrinsic motivation to think in general. Its value to the marketing and persuasion literatures is profound as it has been used as a factor in over 100 published empirical manuscripts (Cacioppo, Petty, Feinstein, & Jarvis, 1996). In several of these studies, a predominant finding is that low need for cognition individuals (LNCs) are less motivated and do not process stimuli like advertisements in an in-depth manner in comparison to high need for cognition individuals (HNCs) (Haugtvedt et al., 1992). In the advertisement choice situation, it seems likely that need for cognition can moderate the choice-sex interaction as HNC and LNC individuals are likely to differ in their motivation to attend to the advertisement before the choice is made. Because HNCs are typically motivated and think about advertisements compared to LNCs,

it seems likely that advertisement choice will not provide the impetus to pay more attention to the advertisement. For this group, there is no reason to pay more attention to the advertisement since they are already doing so; thus the use of choice is not likely to have a significant impact. However, for LNCs who typically lack the motivation to devote cognitive resources to advertisements relative to HNCs, advertisement choice may provide a legitimate rationale for doing so. If so, then it seems likely that advertisement choice would influence this group specifically. Due to its importance in the marketing and persuasion literatures and well as its potential moderating influence of choice, its inclusion in this study was warranted.

This study extended the work of Nettelhorst and Brannon (2012) by exploring the interactive effect of advertisement choice, viewer sex, and need for cognition on attention toward the advertisement. To assess this interaction, male and female viewers with varying degrees of need for cognition were either allowed to choose a specific advertisement to watch or were not given a choice. For those that were allowed to choose, some viewers were given an easy choice with one attractive and one unattractive option while other viewers were given a difficult choice with two attractive options. The following hypotheses were created to reflect the findings of Nettelhorst and Brannon (2012), Brehm (1956), and other research involving need for cognition effects:

H1: Attention towards the advertisement will be significantly higher for female viewers who make a difficult choice compared to an easy choice or no choice.

H2: Attention will be significantly higher for female viewers who make an easy choice compared to no choice.

H3: Attention towards the advertisement will be significantly higher for LNC viewers who make a difficult choice compared to an easy choice or no choice.

H4: Attention will be significantly higher for LNC viewers who make an easy choice compared to no choice.

2. Method

2.1. Participants

Two hundred three students from a large Midwestern university participated in this study. One hundred fourteen students (56.2%) were female. One hundred sixty-six students (81.8%) were self-identified Caucasians. Students' average age was 18.96 years. All students were enrolled in an introductory psychology class at the time of participation, and students were compensated with course credit for their participation.

2.2. Materials

All materials for this study were taken from Nettelhorst and Brannon (2012). A pretest measuring participants' attitudes of 28 different consumer products including various electronic, appliance, clothing, furniture, and sporting equipment items was used to determine which product options to include for the advertisement choice manipulation. Fifty-seven students from the same university participant pool completed the pretest. Pretest attitudes were measured using three 9-point Likert items. The specific items assessed participants' general attitude, purchase interest, and enjoyment of commercial watching for each of the 28 products. General attitude used an extremely negative/extremely positive continuum; purchase interest used a not interested/very interested continuum; and commercial enjoyment used a low/high continuum. Higher values on these items represented more favorable attitudes, higher purchase interest, and greater commercial watching enjoyment.

In extending the work of Nettelhorst and Brannon (2012), the difficult advertisement choice condition included a MP3 player as the primary choice option and a digital camera as the second choice option. This decision was made because results from the pretest showed that the camera was only rated slightly lower in general attitude (MP3: $M = 7.61$, Camera: $M = 6.96$), purchase interest (MP3: $M = 6.84$, Camera: $M = 6.18$), and commercial enjoyment (MP3: $M = 6.19$, Camera: $M = 5.42$) compared to the MP3 player. To create the easy choice condition, the same pretest found that a vacuum was rated substantially lower in general attitude ($M = 3.75$), purchase intention ($M = 2.33$), and commercial enjoyment ($M = 2.68$) compared to a MP3 player. Thus the easy choice used a MP3 player as the primary choice option and a vacuum as the secondary option.²

With the use of a MP3 player as the primary choice option in difficult and easy advertisement choice conditions, a 53 s advertisement for the Zune MP3 player was used as the target advertisement in this study. The advertisement provides a description of the player itself and the functions it can perform which emphasizes the central or systematic route of persuasion rather than the peripheral or heuristic route (Chaiken, 1980; Petty & Cacioppo, 1986). The target advertisement was embedded between two Saturday Night Live Celebrity Jeopardy clips which served as filler material for the study. All video content was shown on a video player embedded within a blank webpage. Sex of the participant was measured using an open-ended question asking participants to indicate their own sex. Participants' need for cognition was measured using the 18-item Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984). Examples of items measuring need for cognition using this scale include, "I would prefer complex to simple problems" and "I find satisfaction in deliberating hard and for long hours". For a review of the reliability and validity of the scale itself, see Cacioppo et al. (1996). Attention toward the advertisement was measured using a self-report item (de Pelsmacker & Geuens, 1998; Geissler, Zinkhan, & Watson, 2006; Lombardot, 2007). This item measured attention using a 7-point Likert item specifically asking participants, "How much attention did you pay toward the advertisement" with none/a lot endpoints (Chattopadhyay & Nedungadi, 1992; Dianoux & Linhart, 2010). Higher values on this item represented larger amounts of attention towards the advertisement.

2.3. Procedure

The same procedures used in Nettelhorst and Brannon (2012) were adopted for this study. After providing consent to participate, participants saw the first Saturday Night Live skit. At the conclusion of the skit, participants completed filler ratings of the show itself. Next, participants were exposed to the advertisement choice manipulation. Participants in the no choice condition saw the target MP3 advertisement without making any choice. Participants in the easy choice condition were given a choice to expose themselves to either a vacuum advertisement or an advertisement for a MP3 player. Finally, participants in the difficult choice condition were given a choice to expose themselves to either a digital camera advertisement or a MP3 player advertisement. If participants in the easy choice or difficult choice selected the MP3 option, then they were immediately exposed to the target advertisement. The majority of participants selected the MP3 option as intended in both choice conditions. However, when the small minority of participants selected either the vacuum or digital camera option, they were informed that the advertisement for their option was not available due to a computer malfunction. These participants were

then shown the target MP3 advertisement. These participants were then excluded from any subsequent data analysis since their attention towards the advertisement would be influenced by watching the unselected (i.e. undesired) option. Thirty-eight participants were removed as a result of choosing either the vacuum ($n = 11$) or camera ($n = 27$) option.

After watching the MP3 advertisement, participants rated the amount of attention toward the advertisement using the Likert item described above. Next, participants watched the second Saturday Night Live skit and rated it using filler items. After completing these items, participants completed the Need for Cognition Scale (Cacioppo et al., 1984) as in previous research (e.g. Haugtvedt et al. (1992); Studies 2 and 3) and reported their demographic information including their sex. Once all measures were completed, participants were thanked for their participation, debriefed about the purpose of the study, and excused.

3. Results

3.1. Data checking

To assess the interaction of advertisement choice, need for cognition, and participant sex on the amount of attention paid towards the advertisement, a $3 \times 2 \times 2$ ANOVA was conducted with attention as the dependent variable. All three independent variables were between-participant in nature with three levels for advertisement choice (none, easy, difficult), two levels of need for cognition (high and low), and two levels for participant sex (male and female). No significant correlation was found between participants' need for cognition scores and gender, $r(129) = .013$, $p = .888$. The lack of correlation suggests that the two constructs are independent of one another. To create high and low need for cognition groups, a median split method was used using participants' scores from the Need for Cognition Scale (Cacioppo et al., 1984), Cronbach's $\alpha = .904$. However, before conducting the three-way ANOVA, the data was checked for statistical normality (Tabachnick & Fidell, 2007). Since all three variables in this analysis constituted nominal or grouped variables, the data was checked for each combination of factorial condition (e.g. male high need for cognition participant in the no choice condition).³ Examples of procedures used for checking statistical normality include identification of missing data, univariate outliers, and variable skewness. Two participants were removed from the subsequent ANOVA because they did not report the amount of attention they paid towards the advertisement. All remaining participants had attention values less than |3.29| standard deviations from their respective factorial mean, so no univariate outliers were present in the data. Skewness values for attention in each of the factorial groups was less than |3.2| standard errors, so no significant skewness was identified either. After completion of the data checking procedures, data from the remaining 201 participants were used for the factorial ANOVA.⁴

3.2. Main effects

Results from the three-way ANOVA showed no significant main effect of advertisement choice on attention towards the advertisement, $F(2, 189) = 1.69$, $p = .19$, $\eta_p^2 = .017$, indicating no significant differences in attention between the no choice, easy choice, and difficult choice conditions (see Fig. 1). The main effect for partici-

² A series of 9 independent samples t-tests using Bonferroni corrections showed no significant differences between males and females' general attitude, purchase interest, or commercial enjoyment for MP3 players, digital cameras, or vacuums.

³ Identical data checking procedures were also conducted using need for cognition as a continuous variable. The results of these procedures match the results stated in the text.

⁴ A multiple regression analysis was also performed using need for cognition as a continuous variable. The findings of the regression analysis matched the findings of the factorial ANOVA.

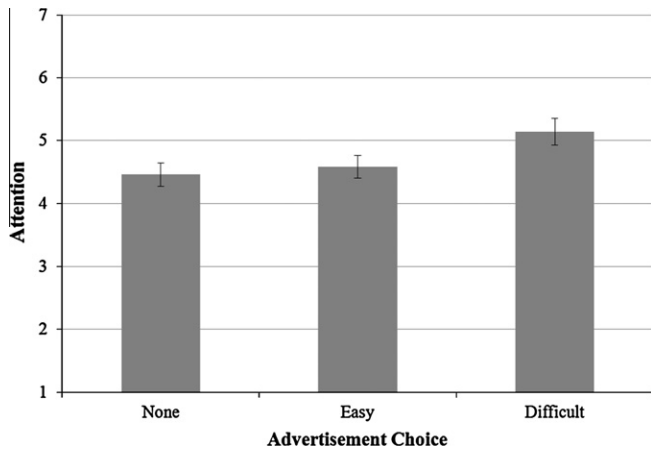


Fig. 1. Mean attention values as a function of advertisement choice. Error bars represent standard errors.

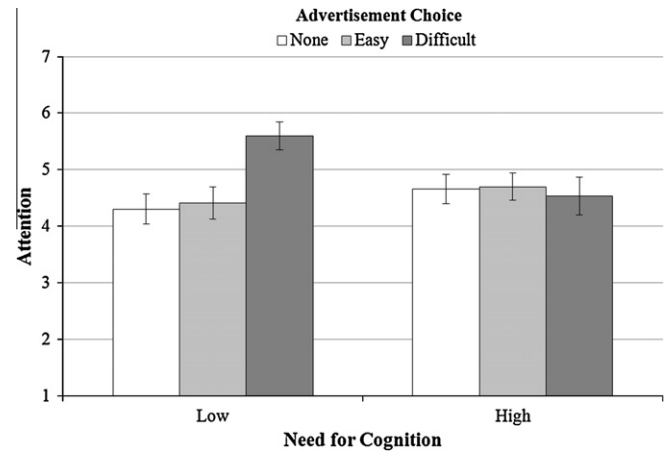


Fig. 3. The interaction of advertisement choice and need for cognition on attention. Error bars represent standard errors.

participant sex on attention was also not significant, $F(1, 189) = 1.85$, $p = .18$, $\eta_p^2 = .010$, indicating no significant difference in attention between males and females (see Fig. 2). Finally, the main effect for need for cognition was also not significant, $F(1, 189) = 0.47$, $p = .49$, $\eta_p^2 = .003$, indicating no difference in attention between LNC and HNC individuals (see Fig. 3).

3.3. Interactions

Results from the ANOVA showed no significant interaction between participant sex and need for cognition on attention towards the advertisement, $F(1, 189) = 0.08$, $p = .77$, $\eta_p^2 = .000$. In contrast, the data did show a significant interaction between advertisement choice and participant sex on attention, $F(2, 189) = 3.83$, $p = .02$, $\eta_p^2 = .039$, indicating different effects of advertisement choice for males and females. When probed using simple effect analyses, the effect of advertisement choice on attention was significant for females, $F(2, 109) = 5.21$, $p = .007$, $\eta_p^2 = .087$, but not for males, $F(2, 86) = 0.11$, $p = .90$, $\eta_p^2 = .003$. Simple comparisons of these effects showed that attention towards the advertisement was significantly higher for females in the difficult choice condition than the easy choice or no choice conditions (see Fig. 2). No difference was found between the easy choice and no choice conditions for females. In contrast to females, there were no significant differences

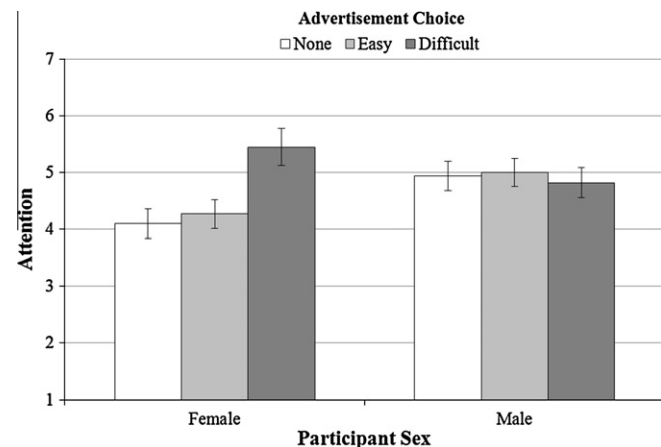


Fig. 2. The interaction of advertisement choice and participant sex on attention. Error bars represent standard errors.

in attention between the difficult choice, easy choice, and no choice conditions for males.

Similar to the advertisement choice-sex interaction, results from the ANOVA also showed a significant interaction of advertisement choice and need for cognition on attention, $F(2, 189) = 3.53$, $p = .03$, $\eta_p^2 = .036$, indicating different effects of advertisement choice for HNC and LNC individuals. Using simple effect analyses to probe the interaction, the effect of advertisement choice on attention was found for LNC individuals, $F(2, 98) = 5.82$, $p = .004$, $\eta_p^2 = .106$, but not HNC individuals, $F(2, 97) = 0.08$, $p = .92$, $\eta_p^2 = .002$. Simple comparisons of the effect for LNC individuals showed that attention toward the advertisement was significantly higher for the difficult choice condition than the easy choice and no choice conditions with no difference between the easy choice and no choice conditions (see Fig. 3). However, there were no significant differences in attention between the difficult choice, easy choice, and no choice conditions for HNC individuals. Lastly, results from the ANOVA showed no significant interaction of advertisement choice, need for cognition, and participant sex on attention towards the advertisement, $F(2, 189) = 0.15$, $p = .87$, $\eta_p^2 = .002$.

4. Discussion

Results from the factorial ANOVA provide support for some but not all of the hypotheses of this study. Because significant differences in attention were found between the difficult choice condition and the easy and no choice conditions for females, hypothesis one was supported. Hypothesis two, however, was not supported since no significant difference in attention was found between the easy and no choice conditions for females. In addition to hypothesis one, hypothesis three was supported since significant differences in attention between the difficult choice condition and the easy and no choice conditions were found for LNC participants. However, hypothesis four was not supported since no significant difference in attention was found between the easy and no choice conditions for LNC participants.

The findings of this study replicate and extend the work of Nettelhorst and Brannon (2012). The replication is evidenced by finding an increase in attention for the difficult choice (camera vs. MP3 player) condition compared to the no choice condition for females but not males. This study extends the work of Nettelhorst and Brannon in a number of ways. First, the findings of this study show that providing a choice to viewers in of itself is not a sufficient means of affecting viewers' attention towards the advertisement. Instead these findings show that the choice needs to be

somewhat difficult in the viewers' minds meaning that the choice needs to be between attractive options. This implication is similar to Brehm (1956) who found greater cognitive dissonance effects when participants chose between products which were more similar in desirability than not. Second, the findings of this study show that females are not the only group that can be affected by a difficult advertisement choice. Low need for cognition individuals (LNCs) also appear to pay more attention to the advertisement compared to their high need counterparts. The similarity of results for female and LNC participants is noteworthy and might suggest that the same mediators linking advertisement choice to attention exist for both groups. It is the opinion of the authors though that this is not the case.

4.1. Possible mechanisms

As indicated in the literature review of this paper, the assumption is that participant sex moderates the effect of advertisement choice because of differential levels of interest between males and females in the consumer domain where choice is provided. Thus for females, advertisement choice may provide a specific motivation to increase their attention towards the advertisement. This increase in females' motivation when a choice is provided may be assessed using Ducoffe's (Ducoffe, 1996) irritation factor. If females have significantly lower degrees of irritation towards advertisements when a choice is provided compared to males, then this difference may be a mediator connecting the choice-attention relationship. Since sex differences have been found in the entertainment and information factors of Ducoffe's model (Sun, Lim, Jiang, Peng, & Chen, 2010), it is possible to find a difference for the irritation factor as well. In contrast to females, the effect of advertisement choice on LNC participants is assumed to reflect a global change in motivation to process the advertisement. When describing the need for cognition variable in the introduction of this paper, the authors noted differences in motivation to attend and process different stimuli including advertisements. Thus the assumption here is that advertisement choice does not affect attention for HNC participants because choice provides no impetus to do so. For these individuals, selective exposure does not matter since they are already motivated to process the stimulus compared to LNC individuals. However, for LNC participants, the ability to selectively choose which advertisement to watch is thought to provide the means of increasing their motivation to attend to and process the advertisement. It should be noted, however, that these are mechanisms are currently unexplored at the moment. It is entirely possible that the mechanism(s) of choice for both groups is due to a factor unrelated to domain interest or advertisement involvement. Regardless of the possible difference in mediation between females and LNC participants, the applied implications of this study are essentially the same for both groups.

4.2. Implications

The major implication of this study is that advertisement choice as an online marketing tool should use difficult product choices and be emphasized towards female and LNC viewers compared to their male and HNC counterparts. For females, the use of a difficult advertisement choice can be accomplished in a number of ways, including using it on websites that are visited by a large number of females, using it when advertising consumer products which are valued and purchased by females, and using it during commercial breaks for online video content which is viewed by a large female audience. In these cases, females can be the predominant group to utilize this choice methodology effectively, but it is not necessary. As long as a large number of females are provided choices of advertisement content, this marketing methodology is

likely to produce positive results. For LNC viewers, the use of a difficult advertisement choice might produce more marketing benefits when used liberally in certain contexts and conservatively in others. Some research suggests that LNC individuals watch more television content compared to their HNC counterparts (Henning & Vorderer, 2001). This difference, although unexplored, may extend to watching television or other video content online. If true, marketers should use genuine advertisement choices as marketing tools during commercial breaks of online video content because the probability of any particular viewer being LNC is higher than that person being HNC. This liberal use of a difficult advertisement choice in this context, however, should also depend on the type of show being viewed as well. Since LNC individuals are less motivated to engage in elaborate thought, an advertisement choice should not be used during breaks for television shows and other video content which require such elaborative thought. Here the probability of any viewer being HNC is higher than him or her being LNC. Similarly, other research shows that LNC individuals are less likely to be politically active than HNC individuals (Bizer, Krosnick, Petty, Rucker, & Wheeler, 1998). Thus providing LNC individuals a choice of exposure to different political advertisements may be ineffective since each option is considered undesirable. Thus similar to females, the use of a difficult advertisement choice as a marketing tool should be most effective for LNC viewers when the choice options themselves are desirable to the group and the choice is provided in contexts that are heavily populated.

5. Conclusions

This study replicated and extended the work of Nettelhorst and Brannon (2012) by finding that advertisement choice increases attention towards the advertisement for female and LNC viewers when the choice is relatively difficult. However, even though this study is a nice progression in the examination of choice within a marketing/persuasion context, it is by no means a comprehensive examination. Many unexplored questions remain as they pertain to the possible effect(s) advertisement choice has on various persuasion processes (e.g. comprehension, yielding, and retention). One example includes whether or not advertisement choice serves as a simple cue in the persuasion context, serves as a means of affecting objective processing, or serves as a means of affective biased processing (Petty & Cacioppo, 1986). Other questions include whether the effects reported in this study generalize to other measures of attention (e.g. eye-tracking) and whether other factors, such as self-monitoring (Snyder, 1974), moderate the choice-attention causal relationship. With a multitude of unanswered questions requiring examination, the psychological construct of advertisement choice deserves more attention from researchers. With increased attention, the exploration of advertisement choice can benefit persuasion theory and actual practice.

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