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Targeted Online Advertisements: Effectiveness as a Function of Need-for-Cognition

By

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Submitted in partial fulfillment of the requirements for Honors in the Department of Psychology

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#### ABSTRACT

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Previous research has suggested that targeted online advertising is more effective when users have a preexisting interest in a product or service. While technology now allows marketers to track the demographics and behaviors of potential customers, the current research examines online ad-perception at an individual level, specifically focused on differences in need-for-cognition. Participants were asked to read a short online news article and were randomly assigned to view a webpage containing either gender-neutral or gender-targeted advertisements. While it was predicted that advertisement recall would be stronger for targeted than non-targeted advertisements, no such association was found. Additionally, advertisement recall did not differ for as a function of need-for-cognition. Despite insignificant findings it is important to note that individual differences in the perception of online advertisements may exist, and that marketers should consider these factors when placing advertisements online. Targeted Online Advertisements: Effectiveness as a Function of Need-for-Cognition

It is no secret that the Internet is becoming a bigger part of daily life for most American adults. In 2010 it was reported that 100% of college students and 92% of 18-24 year olds who do not attend college are active Internet users (Pew Research Center, 2010). Of the 15% of Americans adults who do not use the Internet, a large majority are 65 years or older, and are either skeptical of or do not have access to learn the new technologies (Pew Research Center, 2014). A 2014 study by eMarketer reported that the average American spends over five hours a day engaging with digital media online, which is more time than what is spent on television (TV), radio, or traditional print forms of media. Since much of the information on the Internet is accessible to the public free of charge, the publishers of these "free" websites can sell advertising space alongside their web pages to make a profit. The first online advertisement was a banner advertisement (ad) published in 1994 on wired.com (Edwards, 2014). Since then, real-time bidding via online ad-exchanges has become the primary method in which marketers and advertisers place ads online. In these exchanges, advertisers can buy and sell ad space on a given web page, similar to payment for a billboard or TV commercial time-slot. In the first six months of 2014, spending on Internet advertising totaled over \$23.1B (IAB, 2014). This was a 15.1% increase in spending for online advertisements from the first six months of 2013, and spending is expected to increase as technology advances and advertising strategies focus more on online marketplaces.

How do advertisers know where exactly to place these advertisements? "Targeted online advertising refers to any form of online advertising that is based on information the advertiser has about the advertising recipient, such as demographics, current or past browsing or purchase behavior, information from preference surveys, and geographic information," (Schumann, von Wangenheim, & Groene, 2014, p. 59). Demand-side platforms (DSPs) are online platforms that use mathematical algorithms to track Internet users based on information such as location, demographics or previous browsing behavior and determine who is the best audience for a given advertisement (Marshall, 2014). Advertisers use these DSPs to automatically make purchasing decisions during the ad-exchanges. By targeting advertisements towards users who have a previous interest in a product or service, advertisers hope to increase the likelihood of a future purchase. Consumers' lives have also changed with the increased availability of information online, it is estimated that up to 80% of consumers take the time to research their options online in order to find the best deals before making a purchase (PwC, 2014).

Currently it seems that the best way for a company to measure the success of its targeted advertising campaigns is to look at whether total sales and number of website visits have increased during the run time of the online ads (DeMers, 2014). While these metrics may give some indication of a successful advertisement or appropriate ad-exchange bidding, little research has been done on how targeted advertisements are received by potential customers. It is possible that various psychological factors may influence the perception of advertisements, causing some individuals to feel more positively towards targeted online advertisements than others. Examining the effectiveness of online advertisements from a psychological perspective rather than an Internet behavioral perspective may lead to changes in the targeting tactics used by marketers and the creators of DSP algorithms. These internal factors have not been as commonly studied, and it is important to gain a more comprehensive characterization of

potential consumers in order to best utilize DSPs and to optimize an advertisement's success.

One major finding of advertising research is that previous ad exposure can be enough to enhance advertisement effectiveness. Research by Wang, Shih, and Peracchio (2013) examined this concept by having participants view two advertisements for the same fictitious brand, and then rate the advertisement on how much they liked it and how effective they thought it to be. The first advertisement was shown very briefly (16ms, 150ms, or 500ms) for the "priming" phase, and the second was shown for a longer period of time as a part of the "testing" phase. It was hypothesized that the longer participants were exposed to an advertisement during the priming phase, the more positively they would feel about a second advertisement for the same brand in the testing phase. This effect was thought to be due to processing fluency, with the idea that increased exposure to a stimulus allows for more extensive processing of information and more positive feelings towards the stimulus. In the initial period of viewing a stimulus (in this case an advertisement), individuals cognitively process what they are seeing. Subsequent viewing of the advertisement for a second, third, or fourth time should lead to more favorable feelings towards the ad because the original feelings of processing fluency are replicated while taking less time to re-evaluate and process the image. The study's findings supported the hypotheses, demonstrating that repeated exposure to advertising generates positive effects on advertisement opinion and brand judgments. These results suggest that even if an individual is not interested in a specific product, previous exposure to an advertisement may enhance their opinions towards the brand.

In addition to advertising priming, personalization can also influence one's perception of an advertisement or brand. In a study on information specificity in online advertising, Lambrecht & Tucker (2013) reported findings from an online travel service that advertised its services on other networks through online ad distribution companies. "All consumers who viewed a specific hotel on the travel firm's website during the 21-day time period were eligible for the field experiment" (Lambrecht & Tucker, 2013, p. 566). After visiting the site consumers saw an advertisement for the travel service on one or more of the next websites they visited. Each user was randomly assigned to see either a targeted advertisement (showing the specific hotel that they previously had been looking at) or simply a generic beach hotel advertisement.

Interestingly, while click rates on the actual advertisements for the travel service were low, purchase rates on the website during the 21 day follow-up interval were higher than average. Results showed that while both sets of advertisements were positively correlated with purchase, the targeted advertisements were less successful than the generic advertisements in driving customers to convert. When further examining what factors drove conversions, the authors examined the specific websites on which the targeted advertisements were being placed. Viewers who left the travel firm's website to read travel reviews online, and who were exposed to the targeted ad on the travel site, were more likely to convert after seeing a targeted ad than a generic beach ad. If a viewer had not been reading online hotel reviews, however, the generic advertisements were much more successful in driving conversion, most likely due to the fact that they were less invasive to the consumer. These findings support the ideas of Wang, Shih and Peraccio (2013) that consumers respond better to targeted advertisements when they have a preexisting interest in the product or service.

Research by Bright and Daugherty (2012) further supports that targeted advertising is more effective when users have a preexisting interest in a product or service. The study aimed to better understand the psychological processes of an online consumer in order to develop more effective marketing strategies. Their methodology included a metric to categorize how this effect differs based on the desire an individual has to control their own media environment ("desire for control"). Subjects were brought into a lab to participate in a study on online learning and began by filling out a series of questionnaires regarding their desire-for-control online. All subjects then read three identical news articles, though were randomly assigned to see either keyword advertisements (low-intrusiveness) or banner advertisements (high-intrusiveness) alongside the web pages. The articles had been selected based on pre-test data regarding the topics that most college-aged students were interested in, and categorized as sports, fashion, and technology. All participants were also randomly assigned to be in the customized (primed) condition, or control (non-primed) condition. Subjects who were in the customized (targeted) advertisement group were primed with a pre-test that asked for demographic information and their top three news-categories of interest. Subjects in the control condition did not view any advertisements and were simply asked to read the web articles presented to them. After reading the articles subjects completed a post-test questionnaire on what they had read, specifically focused on "their (1) general attitude toward advertising, (2) recognition of media content, (3) attitude toward the ad, and (4)behavioral intention for clicking the ad," (Bright & Daugherty, 2012, p. 27).

7

Results revealed several insights into the perception of online advertisements. Overall, there was a lower recognition of customized ad-content than non-customized content for all participants. Similarly, individuals both high and low in desire for control reported less intention for clicking on the customized advertisements when they were shown in banner format (high-intrusiveness). This likely has to do with individuals wanting to avoid feeling as if their Internet behavior is being tracked and monitored. Subjects with a lower desire for control reported an overall greater intention of clicking on targeted advertisements than individuals higher in desire for control, likely because individuals higher in desire for control have trained themselves to avoid these invasive online advertisements. These findings imply that the increased spending on online advertising targeted towards specific users could be counter effective, as users are feeling uncomfortable with the intrusiveness of the advertisements, and those who are particularly high in their desire to control their own media environment might not even notice the advertisements in front of them.

Bright and Dougherty's research (2012) suggests that individuals who are higher in desire for control may not be as receptive to targeted online advertisements. Based on this finding, it is plausible that receptiveness may differ based on other psychological factors as well. The researchers noted that individuals who desire a high need for control of their media environment tend to be more analytical and prone to take charge of the situation they are in. Analytical thinking is also a defining characteristic of need-forcognition, a personality variable that has also been examined for its association with advertisement perception. Need-for-cognition, or the tendency for an individual to think critically and analytically, and to enjoy engaging in such thinking, was first described by Cohen, Sotland, and Wolfe in 1955. This personality variable is based on the idea that individuals who are higher in need-for-cognition tend to have more systematic cognitive rules for processing information. Such individuals approach problems in a thoughtful and analytical manner, whereas individuals lower in need-for-cognition will be more likely to base their attitudes and opinions on simple cues such as source attraction, visual distracters, and outside influence.

In Cohen et al.'s original study (1955), the researchers used two separate scales to classify subjects as either high, low, or neutral in need-for-cognition: the Situations Checklist and the Hierarchy of Needs Measure. The variable became independently measurable almost 30 years later, when Cacioppo and Petty (1982) published a 45-item scale measuring need-for-cognition, "the need-for-cognition scale" (NCS) – the scale has since been reduced to an 18-item metric, "the abbreviated need-for-cognition scale" (Cacioppo, Petty & Kao, 1984). Through a series of experiments Cacioppo and Petty combined various aspects of the Situations Checklist, the Hierarchy of Needs Measure, and other scales measuring individuals' "tendency to achieve." The researchers then ran a series of studies where participants completed a variety of cognitive tasks, such as finding simple figures within complex drawings and completing a number circling task, and then ranking these tasks on how enjoyable they found them to be. Following the tasks all participants completed the NCS. Researchers compared participants' responses to how enjoyable they found the tasks to be with their NCS scores as a way measure the effectiveness of the scale.

Results indicated that the NCS was truly an effective measure of individuals' tendencies to analyze, evaluate, and store information, and that the scale had both predictive and content validity. Subjects high in need-for-cognition reported feeling that the tasks were more enjoyable and being less frustrated at the tasks than the subjects who were lower in need-for-cognition. Closer examination of scores found that need-forcognition did not vary as a function of gender, and differed from intelligence quotient (IQ) scores such that the two are not necessarily correlated in any individual. A person's need-for-cognition was found to be more of a measure of effort and motivation to learn than their actual learning capabilities.

Since the publication of the NCS, there has been vast research on the differences between individuals higher and lower in need-for-cognition. Need-for-cognition levels have been associated with differing responses to situations in daily life. While some of this research has focused on online environments, a majority has focused on more traditional forms of advertising, such as mass media or print. A study on metaphor comprehension in advertising, for example, found that individuals lower in need-forcognition are more likely to experience information overload, or difficulty when making decisions, as they are less prone to process, analyze, and evaluate complex information (Chang & Yen, 2013).

Participants were randomly assigned to view an advertisement portraying an explicit metaphor, implicit metaphor, or non-metaphor image and phrasing. An explicit metaphor, for example, would be an advertisement for dandruff shampoo with the slogan 'you may erase anything unwanted,' and an image of the shampoo bottle erasing a chalkboard. An implicit metaphor would contain the same slogan, and an image of an

eraser erasing a chalkboard, with the brand information featured elsewhere on the page. A non-metaphor advertisement would simply contain a picture of the shampoo bottle with a general slogan. Participants viewed one of the three assigned advertisements, and subsequently answered questions regarding their attitude towards the brand, their purchasing intentions, how well they understood the metaphor, and also completed Cacioppo and Petty, and Kao's abbreviated NFC Scale (1984).

The researchers hypothesized that advertisement attitude and purchasing intention would be higher in the two metaphor conditions than in the non-metaphor condition. They also hypothesized that individuals higher in need-for-cognition would have more favorable opinions towards explicit and implicit metaphors depending on the advertisement content, while individuals low in need-for-cognition would not differentiate between the two metaphor conditions. Results supported both of these hypotheses. Processing metaphors is an effortful cognitive task, and when participants took the time to fully interpret these messages, their attitudes and purchasing intention were enhanced. Interestingly, individuals lower in need-for cognition did not differentiate between metaphor type, suggesting that they did not process the message of the advertisement as well as individuals higher in need-for-cognition did. These findings support the idea that consumers' responses to advertisements differ as a function of needfor-cognition, and that marketers should strategically consider the average need-forcognition level of their target audience when designing and placing their ads.

Further research by Lin, Lee and Horng (2011) found that individuals lower in need-for-cognition tend to rely more on outside sources than personal opinions when making purchasing decisions. Their research evaluated the likelihood that an individual

would purchase a cell phone based on various online reviews, hypothesizing that in response to reading a product review, individuals lower in need-for-cognition would be more likely to rely on others' opinions, visual cues, source attraction, and number of arguments. In contrast, it was predicted that subjects higher in need-for-cognition would use a more systematic decision-making process when examining the product, therefore their opinions would not be swayed by the non-qualitative factors of the product reviews.

Subjects' opinions on the materials reviewed (advertisements, arguments, and product reviews) were assessed, as well as their individual level of need-for-cognition. Results showed that both more detailed product reviews and more reviews in general had positive effects on individuals' intention to purchase the cell phone. Individuals who were high in need-for-cognition, however, focused more on the quality of the reviews, while individuals low in need-for-cognition focused more on the quantity of the reviews. These findings provide evidence for the idea that online consumption behaviors differ based on need-for-cognition, such that individuals low in need-for-cognition are more easily persuaded by visual cues and messaging, while individuals high in need-forcognition are more thoughtful in their decision making tactics.

Notably, a study on the relationship between need-for-cognition and advertising recall found results contrary to the study by Lin, Lee and Horng (2011). Researchers Kuo, Horng, and Lin (2012) investigated advertising recall, hypothesizing that individuals higher in need-for-cognition would have better recall of a product than individuals lower in need-for-cognition due to their tendency to process information systematically rather than relying on external features like number of arguments or physical attractiveness. Participants' NFC scores were collected prior to the memory test. Each participant was seated in front of computer and shown a simulated online shopping website with an advertisement for a new cell phone. They were asked to assess the cell phone and how well they thought it would do compared to competitors. After approximately 10 minutes of assessment, the participants were given a series of recall tests and completed a measure of purchasing intention. Results supported the hypotheses, as participants who were higher in need-for-cognition were able to recall more of the advertising content than participants lower in need-for-cognition. This finding was based on the idea individuals who are higher in need-for-cognition use more cognitive resources, which therefore improves their information processing allowing increased recall to the details of the advertisement.

A limitation of this study, however, was that since participants were asked to study the advertisement, the results generalize more to differences in memory recall than to differences in recall for online advertisements. Typically online advertisements are not the focal point of a webpage, so users must voluntarily attend to them amidst other Internet activity. While it seems to be consistent amongst research that individuals who are higher in need-for-cognition use more cognitive resources and process information more analytically, it is possible that they may use their resources to avoid these advertisements as was seen in the research by Bright and Daugherty (2012). Individuals lower in need-for-cognition, alternatively, may be more easily distracted when browsing the internet, and it is possible that the visually attractive cues of advertisements catch their attention and result in better recall of the details of the ad.

The present research seeks to expand on the limited published data on the psychological factors that may influence online advertisement perception and

effectiveness. Past research has demonstrated that although priming can be an effective way to increase ad favorability (Wang, Shih, & Peracchio, 2013), targeting specific users can also be viewed as invasive, and this negative perception can decrease advertisement effectiveness (Lambrecht & Tucker, 2013; Bright & Dougherty, 2014). Differences in the personality variable need-for-cognition have also been shown to exist, such that individuals higher in need-for-cognition tend to pay attention to details and systematically analyze information, both in advertisements and in other cognitive tasks, whereas individuals lower in need-for-cognition attend more to source cues and external features, and may perceive advertisements more favorably simply because of attractiveness or messaging (Lin, Lee & Horng, 2011).

Closer examination of the personality variable need-for-cognition and its relationship with individual's perception of online advertisements could provide new information for marketers and advertisers about the best ways to target consumers online. In the present experiment we investigate how awareness and perception of online advertisements differ among individuals high and low in need-for-cognition, and how awareness and perception differ when an individual is exposed to a targeted online advertisement versus a non-targeted online advertisement. Participants were asked to read a short online news article about a recent event and to then answer a series of questions about the article, followed by a recall question about what advertisements were shown alongside the article. Since individuals higher in need-for-cognition tend to use more effort when processing information and generally enjoy thinking analytically, we predicted that this subset of subjects would focus on the cognitive task at hand (reading the news article), and would ignore the advertisements placed around the web page. Individuals who were lower in need-for-cognition, alternatively, tend to base their attitudes on simple cues such as source attraction or number of messages, so we predicted that they would attend more to the advertisements instead of simply reading the article and moving on.

The hypothesis for this research had two components. The first hypothesis (H1) that individuals who classified as higher in need-for-cognition would be less attentive to the online advertisements during the experiment, and less likely to self-report noticing and responding to online advertisements than individuals who were lower in need-for cognition. It was further predicted (H2) that all participants would be more attentive to the targeted online advertisements and more likely to remember these advertisements than the non-targeted, gender-neutral, advertisements, however the effect of H1 will hold such that individuals lower in need-for-cognition will be more attentive to all advertisements than individuals higher in need-for-cognition.

#### Method

#### **Participants**

One-hundred-and-seven Union College students took part in the study for either course-credit or for monetary compensation. Ages ranged from 18 to 23 (M=20.23). Seventy-six females and 31 males participated in the study.

#### Procedure

Participants entered the laboratory and completed paperwork acknowledging their informed consent. Participants were told that the experiment was on online learning

behavior and that they would be asked to read a short online news article. Each participant was seated in a private room in front of a desktop computer and was randomly assigned to read a news article on a simulated website with either gender-targeted or gender-neutral advertisements placed alongside the page. Every participant read the same news article, and while it was a previously published news article, all other aspects of the website, including the website name, were created and manipulated using weebly.com for the purpose of this study.

Participants were instructed that all links on the web page had been disabled and that they should not click away from the main article at any time. In the gender-neutral advertisement condition, male and female participants were randomly assigned to view one of two advertisements, either for a technology company or for a travel cruise line. Participants in the gender-targeted advertisement condition were randomly assigned to view one of two advertisements targeted towards their gender. Males viewed an advertisement for either a sports gambling website or for a car company. Females viewed an advertisement for either a skin care product or for a women's clothing website. Each of these six versions of the web page also featured a "most read stories" section and a "popular videos" section alongside the article, as well as a "more to explore section" underneath the article to enhance the authenticity of the site (see Appendices A-F).

After reading the news article participants answered a series of questions regarding the article they had just read. Following this, participants were asked whether they recalled the name of the news website, and if they remembered any of the advertisements they had seen on screen, with the ability to select the name of the company of the advertisement they had seen out of a randomized list. Participants also had the option to select "I do not remember any of the advertisements on the web page."

Next participants answered a series of questions regarding their Internet behaviors and their tendency to interact with advertisements online. Questions included: *In general, do you like or dislike online advertisements? In general, do you find online advertisements informative? In general, how likely are you to click on online advertisements? In general, how do online advertisements targeted towards your interests or previous Internet browsing make you feel?* 

Participants then completed Cacioppo, Petty, and Kao's 18-item abbreviated Need for Cognition Scale (1984), attached in Appendix G. Each question was answered using a five-item Likert scale, ranging from 1=*extremely uncharacteristic of myself* to 5=*extremely characteristic of myself*. Finally participants answered questions regarding their demographics (age and gender), and then were debriefed, rewarded their payment or course credit, and dismissed.

#### Results

Data quality assurance and quality control were conducted to ensure that all participants fully completed the study and that each participant in the gender-targeted condition self-identified with the targeted condition that they had been assigned to (participants had the option to identify as transgender, however no participants in the present research selected this option).

We first reverse scored nine of the items on the NFC scale as indicated by Cacioppo, Petty and Kao (1984). Next we assessed the extent to which the 18 items correlated with one another using a Chronbach Alpha analysis, finding a satisfactory score ( $\alpha = .86$ ). NFC scores were calculated by assigning positive and negative values to each item on the scale, such that if a participant indicates that an item is *extremely characteristic of myself* they would receive a value of +2, and an indication that item is *extremely uncharacteristic of myself* would receive a value of -2. Neutral responses (a 3 on the 5-item Likert scale) did not receive any points. Each participant's score was calculated by summing his or her responses to the 18 questions. Using the 5-item scale, the highest possible score on the need-for-cognition scale is 36 (18 items multiplied by two points each), and the lowest possible score is -36. NFC scores ranged from -31 to 25 (*M*=-7.02), with the cut-off for high in need-for-cognition considered a score greater than zero. Seventy-nine of the 107 participants identified as high in need-for-cognition, 28 participants identified as low in need-for-cognition.

A chi-squared analysis was used to assess the relationship between need-forcognition and advertisement recall. Advertisement recall did not differ as a function of need-for-cognition,  $\chi^2(1) = .42$ , p = .52, such that 23 of the 79 individuals high in needfor-cognition remembered the online advertisement, and 10 of the 28 individuals low in need-for-cognition remembered the online advertisement. This effect did not differ by gender, such that 16 of the 54 females who classified as high in need-for-cognition and 9 of the 22 females who classified as low in need-for-cognition remembered the advertisement,  $\chi^2(1) = .90$ , p = .34, and seven of the 25 males who classified as high in need-for-cognition and one of the six males who classified as low in need-for-cognition remembered the advertisement,  $\chi^2(1) = .32$ , p = .58. Advertisement recall also did not differ as a function of need-for-cognition for either the gender-targeted advertisements,  $\chi^2(1) = .08, p = .78$ , or for the gender-neutral advertisements,  $\chi^2(1) = .35, p = .56$ .

The five questions on Internet attitudes were assessed for internal correlation, receiving a somewhat satisfactory Chronbach's Alpha score ( $\alpha = .76$ ). An overall Internet attitude score was calculated for each participant by taking an average of his or her responses to the five questions. Scores ranged from 1.00 to 4.40 (M = 2.10). An independent samples t-test revealed that individuals high and low in need-for-cognition did not differ in terms of their Internet attitudes, t(105) = .71, p = .92, such that Internet attitudes of participants high in need-for-cognition (M = 2.19) were equivalent to Internet attitudes of participants low in need-for-cognition (M = 2.08).

#### Discussion

As technology advances and the information on the Internet is increasingly available for access by the public, marketers and advertisers are putting more and more of their advertisements online. Research on online advertisements has shown that consumers respond better to targeted ads when they have a preexisting interest in the targeted product or service (Lambrecht & Tucker, 2013), and while marketers can use demandside platforms or user demographic information to try to target potential customers online, the effectiveness of these targeted advertisements at an individual level has not been as thoroughly studied.

Need-for-cognition is a personality variable that assesses the extent to which an individual enjoys engaging in critical and analytical thinking (Cohen, Sotland, &Wolfe, 1955). Individuals who are higher in need-for-cognition tend to have more systematic

cognitive rules for processing information, whereas individuals lower in need-forcognition often base their attitudes and opinions on simple cues such as source attraction, visual distracters, and outside influence.

The current research examined the recall of gender-targeted and gender-neutral advertisements in an online learning environment, predicting that participants who were higher in need-for-cognition would have poorer recall for advertisements than individuals who were lower in need for cognition. Individuals higher in need-for-cognition tend to cognitively process and analyze information, whereas individuals lower in need-for-cognition are more easily distracted by external factors, such as visual cues and number of messages. In addition it was hypothesized that advertisement recall would be stronger for gender-targeted advertisements than gender-neutral advertisements, since participants were thought to have some level of pre-existing interest in the products advertised in the gender-targeted conditions.

Analysis of the data did not support either hypothesis in the present research. Participants had equal recall for advertisements regardless of need-for-cognition, and memory for advertisements was also equivalent for participants in the targeted and nontargeted advertisement conditions. When surveyed on general opinions towards online advertising, participants' tended to have negative attitudes, (M = 2.10 out of 5.00), indicating generally negative opinions of online advertisements. No differences were found in attitudes towards online advertisements and need-for-cognition scores.

#### Implications

20

Identifying factors that make some online advertisements more effective than others is essential for marketers and advertisers as they spend more and more money in online marketplaces. The present research reveals that targeting specific users by gender may not be the most effective advertising tactic, as no significant differences were found in participants' recall for gender-targeted and gender-neutral advertisements. Previous research has suggested that some Internet users respond negatively to advertisements that they consider to be intrusive of their online privacy, which may explain why recall was not higher despite the likelihood of previous interest in the types products being advertised (Lambrecht & Tucker, 2013; Bright & Dougherty, 2014).

Previous research on need-for-cognition has indicated that individuals lower in need-for-cognition may use different cognitive processes than those higher in need-forcognition when analyzing advertisements, due to their tendency to focus more on visual cues and external messaging. The present research did not find significant differences in memory for advertising between these two groups in an online learning environment, however it is still possible that individual differences exist that influence perceived advertisement effectiveness. If advertisements are eliciting feelings of intrusiveness from Internet users, they are likely developing and modifying cognitive tools to either take note of or avoid online advertisements, depending on the situation. It would be interesting to understand more about these cognitive processes, and additional research could provide useful information for marketers and advertisers to help develop online marketing strategies that will catch users' attention.

#### Limitations

The most notable limitation of the present research was that participants were presented with an online learning task rather than a realistic Internet browsing experience. Participants were brought to a stimulated news website where they were asked to read a news article, after which they were told they would be answering questions about the article. It is possible that participants of both high and low levels of need-for-cognition remained focused on only the article hopes of completing the experiment as quickly as possible, instead of exploring other aspects of the webpage as they might have if they were reading the article purely for interest. Had participants been given the chance to freely explore the Internet, as they might do in their day-to-day life, it is possible that the results also would have differed. For the purposes of this study, however, I was limited in my ability to both manipulate the online advertisements and later test advertisement recall.

Another limitation of this research was that the advertisements selected were chosen based on common products of interest for men and women, rather than on individuals specific demographics and past Internet behavior. It is unlikely that all of the male participants in the study were interested in sports and cars, and equally unlikely that all female participants were interested in skin care and clothing. More specified targeting may have been a better way to catch participant's attention as they were reading the article, but again was a limitation in the ability to manipulate the advertisements and website.

#### **Directions for Future Research**

While in the present study I examine advertisement recall in an online learning environment, future research should examine recall in other Internet settings such as when freely browsing the web, or on social media websites like Facebook or Twitter. The current research could also be replicated with a broader demographic of participants to gain a more general view of Internet advertisement interactions. Participants in this study were all students from a small liberal arts college in the Northeast of the United States, and while these students varied in their degree of need-for-cognition, they likely share some common Internet behaviors that differ from those of older and younger Internet users. Frequency of Internet use, for example, might make college students more or less likely to attend to online advertisements than individuals in different demographics.

One interesting direction for future research would be to collect data from online ad distribution companies through a method similar to Lambrecht and Tucker (2013). Their experiment used real data following Internet behavior, click through rates, and sales data on a travel website to understand targeting effectiveness. Adopting a similar method with other types of websites could help access information from broader audiences, while overcoming the limitations in manipulation capabilities that posed challenges in the present research.

Although the predicted differences in advertisement recall between individuals high and low in need-for-cognition were not identified in the present research, it is still important to note that individual differences may exist that cause some individuals perceive advertisements to be more effective than others. Researching alternative personality and psychological variables could help add the already detailed demographic profiles stored for individuals online could lead to even more specified targeting, as it would allow marketers and advertisers to tailor content even more specifically for each user. Alternatively, if results show that targeted advertisements are not as effective for individuals with certain personality traits, advertisers may find it beneficial to take a more generic and perhaps simplified advertising strategy, so as not to come off as overly intrusive to potential customers.

#### Conclusion

The current research examined the relationship between need-for-cognition and the perceived effectiveness and memory for gender-targeted versus gender-neutral advertisements online. Although this research does not add to the available literature regarding what internal factors might make a person more likely to notice an advertisement, it does reveal that the popular trend of targeting advertisements towards specific users in hopes of increasing interest in a product or brand may be countereffective. College-aged students reported overall negative perceptions and opinions of online advertisements, and paid little attention to them in an online learning environment. With marketers and advertisers investing so much money into online advertisements, the present research raises questions as to what strategies are best for getting Internet users to attend to the advertisements on each web page, and what individual factors might make someone more or less likely to remember an online advertisement.

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# APPENDIX A



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# APPENDIX B

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#### APPENDIX C

Female-targeted webpage version #1: http://dfninews2.weebly.com/politics.html



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# APPENDIX D

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# APPENDIX E

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# APPENDIX F

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#### APPENDIX G

#### **Need For Cognition Scale**

For each of the statements below, please indicate whether or not the statement is characteristic of you or of what you believe. For example, if the statement is extremely uncharacteristic of you or of what you believe about yourself (not at all like you) please place a "1" on the line to the left of the statement. If the statement is extremely characteristic of you or of what you believe about yourself (very much like you) please place a "5" on the line to the left of the statement. You should use the following scale as you rate each of the statements below.

- 1. I prefer complex to simple problems.
- 2. I like to have the responsibility of handling a situation that requires a lot of thinking.
- 3. Thinking is not my idea of fun.\*\*
- 4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.\*\*
- 5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.\*\*
- 6. I find satisfaction in deliberating hard and for long hours.
- 7. I only think as hard as I have to.\*\*
- 8. I prefer to think about small daily projects to long term ones.\*\*
- 9. I like tasks that require little thought once I've learned them.\*\*
- 10. The idea of relying on thought to make my way to the top appeals to me.
- 11. I really enjoy a task that involves coming up with new solutions to problems.
- 12. Learning new ways to think doesn't excite me very much.\*\*
- 13. I prefer my life to be filled with puzzles I must solve.
- 14. The notion of thinking abstractly is appealing to me.
- 15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
- 16. I feel relief rather than satisfaction after completing a task that requires a lot of mental effort.\*\*
- 17. It's enough for me that something gets the job done; I don't care how or why it works.\*\*
- 18. I usually end up deliberating about issues even when they do not affect me personally.

Note: \*\*=reverse scored item.