Salience and Effortful Processing: The Effects of Involuntary Attention to Web Ads on Implicit and Explicit Attitudes

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ABSTRACT

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Salience and Effortful Processing: The Effects of Involuntary Attention to Web Ads on Implicit and Explicit Attitudes

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Salient stimuli, defined as information that sticks out from a particular context, can capture people’s involuntary attention (Kardes, 2002). The current examined the effects of salient web ads on people’s implicit and explicit attitudes. Prior study suggests that peripheral processing, which does not require much cognitive efforts had greater impact on people’s implicit attitudes, because it is similar to the associative learning (Wagner & Sundar, 2009). Therefore, the current study hypothesized that salient web ad could lead to less positive implicit attitudes than less salient web ad since it could elicit more central processing of the ads content. The results showed that salient and less salient web ads did not differ significantly in their effects on implicit and explicit attitudes. The theoretical and practical implications of the study were discussed.
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CHAPTER 1: INTRODUCTION

Advertisers use motion and other attention-grabbing tactics to induce effortful processing of web advertisements, but are such tactics necessarily effective in persuasion, especially at the implicit level, or rather, below the level of consciousness? Neuroscience has shown that the vast majority of our decisions are made mostly without much elaborate thought (Heath & Felwick, 2007). However, in advertising research, most studies still rely heavily on measuring articulated responses, even though persuasion could operate under people’s conscious thoughts and people cannot always name the “critical stimulus” that had influenced them (Dijksterhuis, 2010; Nisbett & Wilson, 1977; Wegner & Bargh, 1998).

Salient stimuli, defined as information that sticks out from a particular setting or context to “capture the attention of all of the people some of the time” (Kardes, 2002, p.38), is most likely to be selected and coded from the environment (Lang, 2000). According to Simola, Kuisma, Öörni, Uusitalo, and Hyönä (2011), “salient changes in the visual field may capture attention involuntarily in a stimulus-driven, bottom-up manner” (p.175). Salience in ads, by drawing people's attention, calls for more cognitive effort to process (Reeves & Nass, 1996). Prior studies suggested that individuals under cognitive load had fewer mental resources to engage in information processing (Levitam & Visser, 2008; Petty, Wells, & Brock, 1976). Simola et al. (2011) examined the impact of salient ads on attention on web pages. They found that motion, as a salient feature, attracted overt visual attention and disrupted reading. Salient web ads, by attracting people’s involuntary attention and requiring more cognitive efforts, can elicit more effortful central processing than low salient ads. The current study tests this by exploring the
relationship between peripheral processing and implicit attitudes. The results can benefit advertisers because people make purchase decisions under the influence of implicit attitudes, especially when they have little motivation or opportunity to make such decisions.

While some studies have gauged automatic responses to web advertising (e.g., Reeves & Nass, 1996; Kalyanaraman & Sundar, 2004), the bulk of the literature has used self-reported measures to evaluate users’ responses to web ads (e.g. Brasel & Hagtvedt, 2015; Bayles, 2002; Lee, Ahn, & Parl, 2015; McCoy, Everard, Polak, & Galleta, 2007). The results may provide a less than adequate picture of Web ad effects because persuasion can occur from unconscious processing of the information without much attention, which may not be fully captured by recall and explicit attitude measures (Handly & Runnion, 2011). To better understand how users process and evaluate web ads, it is necessary to measure responses to both more and less effortfully processed Web ads. One way to do this is to use both implicit and explicit attitude measures.

In research on attitudes, scholars have differentiated deliberate, or “explicit” attitudes and automatic or “implicit” attitudes (Greenwald & Banaji, 1995; Greenwald & Farnham, 2000; Petty, Fazio, & Briñol, 2002; Wilson, Lindsey, & Schooler, 2000). Explicit attitudes are often gauged by self-reported measures, while implicit attitudes are inferred from people’s performances on response latency measures, such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) and evaluative priming (Fazio, Jackson, Dunton, & Williams, 1995).

According to Fazio’s (1990) Motivation and Opportunities as Determinants (MODE) Model, attitude should be perceived as object evaluation associations of varying
strength. The processes by which attitudes are formed, either through active reasoning and diagnostic scrutiny of the attitude object (Gawronski & Bodenhausen, 2006; Petty & Cacioppo, 1986) or through passive associative learning process (De Houwer, Thomas, & Baeyens, 2001; Olson & Fazio, 2001), influence the strength of object-evaluation association and attitude accessibility from the memory (Fazio, 1995; Fazio, 2007). Researchers characterized associative learning as the situation where people use knowledge acquired by their previous experiences to fill in information about the current situation automatically (Smith & DeCoster, 2000). The variability in associate strength is referred to as the attitude-nonattitude continuum (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). At the nonattitude end of the continuum, individuals may have no or weak prior evaluative association with the attitude object. The strength of association between the object and evaluation increases along the continuum. When individuals have a strong object-evaluation association, evaluation can be automatically activated upon mere exposure or mentioning of the attitude object (Fazio, 1990).

Implicit measures could capture automatically activated attitudes (Goodall, 2011). Fazio (1990) proposed that behavior could stem from either a spontaneous process based on the automatic activation of a relevant attitude or a deliberate process during which all information presented is carefully considered. When individuals do not have motivation and opportunity to process the information, automatically activated, preexisting attitudes will influence behaviors. On the other hand, if people have adequate motivation and opportunity to deliberate on the activated attitude, the construal of an attitude object in the immediate context “arise in a more inductive, bottom-up fashion” (Shuette & Fazio, 1995, p.703). In other words, behavior is predominantly influenced by deliberated
processes only when individuals are sufficiently motivated and are given adequate resources to do so. Therefore, explicit measures are valuable in predicting decisions when people have motivation and opportunity to engage in a deliberate evaluation process, while implicit attitudes can be more predictive of behaviors when either motivation or resources are scarce. As such, measuring both provides for more description and lends to a more insightful explanation of the effects of effortful versus non-effortful or less-effortful web ads consumption.

Fazio (1990) proposed that the strength of association between the object and evaluation could increase through associative learning. Associative learning was characterized as an “automatic affective reactions resulting from the particular associations that are activated automatically when one encounters a relevant stimulus” (Gawronski & Bodenhausen, 2006, p. 693). When people are engaged in associative mode, they tend to use concepts or information that are associated with cues found in a problem or stimulus (Smith & DeCoster, 1999). Because such activation processes do not require much motivation or cognitive capacity to evaluate the object, some scholars (Smith & DeCoster, 1999; Wagner & Sundar, 2009) argued that associative learning resembled the peripheral route of persuasion in the Elaboration Likelihood Model (ELM, Petty & Cacioppo, 1986). The ELM proposes a more effortful “central route” and a less effortful “peripheral route” to process information (Petty & Cacioppo, 1986). Message recipients who use the central route are engaged in a more effortful information processing, and they are more likely to form their attitudes after a careful consideration of persuasive communication. The peripheral route is used when recipients do not scrutinize
the issue-related information and exert much less cognitive effort in an evaluation of persuasive messages (Petty, et al., 2002).

The ELM holds that attitude change does not always require effortful evaluations of the information provided. Instead, when people’s motivation and ability to process the issue-relevant information are lacking, persuasion can still occur and people’s attitudes are more likely to be influenced by simple cues in the persuasion context, such as the size of the ads (Cho, 2003). If the peripheral route is similar to associative learning, the strength of association between the object and evaluation should increase with exposure to peripheral cues, which can be captured by implicit attitude measures. Attitudes formed through peripheral processing are shown to be less enduring and stable; furthermore, such attitudes are less resistant to counter-arguments than those formed through central processing (e.g. Petty & Cacioppo, 1986; Petty, Priester & Briñol, 2002).

In contrast, ads that don’t have features such as motion in a static background or color in a more neutral background may not stand out as strongly as salient ads. Thus ads with low salience may not attract immediate attention and are more likely to be processed in a less effortful manner using peripheral cues. Given associative learning formed via peripheral processing may be more easily captured using implicit attitude measures, this thesis tests the idea that attitudes formed through low salience ads, would be more easily captured using implicit measures. Based on the above arguments the thesis proposes that implicit attitudes of people who are exposed to low salient ads, as opposed to high salient ads, are more likely to be impacted which could have practical implications for advertisers.
To this end, the present study outlines a two-condition controlled laboratory experiment wherein one group will see ads designed to evoke involuntary attention through the use of salient web ads, while a second group will see the same ads in a context that promotes less effortful processing, based on a lack of salience. A review of the literature on salient web ads, ELM, and MODE Model that follows will allow for the proposal of a hypothesis about the effects of effortful processing on implicit attitudes as well as a research question about the effects of salience web ads on explicit attitudes. The study methodology, results and implications are then discussed.
CHAPTER 2: LITERATURE REVIEW

Salience and Motion in Web Advertising

The Internet is a popular medium for advertising (Wu, 1999). Online advertisements such as banners, pop-ups, and pop-under ads (which are similar to pop-up ads but create a new browser window in a layer beneath the main window) are often designed to catch the attention of Internet users (McCoy et al. 2007). Web advertising has taken the advantage of features of the online environment, such as animation and colors, to maximize attention-getting capabilities (Borse & Lang, 2000; Kalyanaraman & Sundar, 2004), elicit higher arousal (Heo & Sundar, 2000; Sundar & Kalyanaraman, 2004), and enhance memory accessibility (Heo & Sundar, 2000; Lang, et al. 2002).

In web advertising, both the content and structure of an ad can influence the amount of attention devoted to it and the degree to which the message is comprehended (Li & Bukovac, 1999, Mitchell, 1983). The content of an ad refers to the message or information the ad contains, and the structure is how the ad is presented (Li & Bukovac, 1999). Some studies that focused the effects of animation as an important structure feature of banner ads showed that animation could increase click-through rates and brand involvement (e.g. Cleland & Carmichael, 1997; Idemudia & Jones, 2015). Previous research showed that information presented both verbally and visually were more likely to be remembered (Gati & Tversky, 1987). Some scholars attributed such effects to distinctiveness (Li & Bukovac, 1999). According to Gati & Tversky (1987), distinctive stimuli were easier to be located in memory because they set themselves apart from other information. For instance, an animated object on a still background can be regarded as distinctive.
Similar to the conceptualization of distinctiveness, salience, often characterized as novel, unexpected or represented change in the environment, was shown to have higher possibility to be encoded in people’s memory formation process (Lang, 2000). A salient stimulus is any information that gets selected involuntarily because it represents a change from the background (e.g., color, orientation, luminance, or motion; Yantis & Egeth, 1999). Contrast from the background makes salient stimuli difficult—if not impossible—to ignore (Simola et al., 2011). High salience stimuli are more likely to provoke greater brand recall, which suggests high levels of cognitive involvement (Blackwell, Miniard, & Engel, 2000).

Salient stimuli are context dependent (Kardes, 2001). As Kardes (2001) suggested, motion in a static background constitutes salience. Because people tend to pay automatic and involuntary attention to changing and moving stimuli in static surroundings, motion ads in the context of stillness alert people to pay attention involuntarily (Reeves & Nass, 1996).

The effects of animated or motion web ads have been studied extensively. The results of prior studies on motion ads effectiveness have been mixed. Some studies suggested that compared to their static counterparts, motion ads were more effective in generating greater brand awareness, more favorable brand attitude, and higher purchase intention (Briggs & Hollis, 1997; Kalyanaraman & Oliver, 2001; Yoo & Kim, 2005). It was also shown that motion ads could attract more attention than non-motion ads (e.g. Yoo & Kim, 2005; Yoo, Kim, & Stout, 2004). Kim, Yoo, and Stout (2003) found a positive relationship between animation speed and the amount of attention paid to the ads (Kim, Yoo, & Stout, 2003). Li and Bukovac (1999) found that animated banner ads led to
shorter response time and better recall than non-animated banner ads. Lee, Ahn, and Park (2015) examined the moderating role of the use of motion in the effect of repetition and they found that attention wear-out occurred with static but not with motion banner ads. However, the study also showed that motion in banner ads did not attract users’ attention initially, but with repeated brief exposures, motion banner ads resulted in more positive attitude and better recall.

In contrast, other studies found that motion web ads were perceived annoying by most users (Goldstein, et al., 2014). A study that used eye-tracking showed that no significant difference was observed in the frequency of fixations between static and motion banners ads (Kuisma, Simola, Uusitalo, & Öörni, 2010). Bayles (2002) found that the use of motion in banner ads did not lead to better recall. Moreover, Burke, Hornof, Nilsen, and Gorman (2005) found that motion banner ads resulted in worse performance in recall than static banner ads. Another eye-tracking experiment indicated that motion in banner ads attracted less attention and generated worse recall than static banner ads (Lee & Ahn, 2012). Hamborg, Bruns, Ollermann, and Kaspar (2012) found that motion enhanced ads helped recall, but had no effect on attitudes toward the ad. A more recent study showed that neither recall nor attitude was influenced by the use of motion in banner ads (Lee, Huang, & Bente, 2016). Lee et al. argued that motion banner ads might be more effective when users were in suffer mode, which is a “stimulus-driven browsing mode” (p. 524).

Although less agreement has been reached among scholars about motion’s effects on ads effectiveness, prior studies suggested that motion stimuli required more cognitive efforts to process than static ones (Hong, Thong, & Tam, 2004; Lee & Ahn, 2012).
Consistent with the motion effect theory, which suggests that human beings automatically attend to moving objects and process relevant information, even in their peripheral vision (Reeves & Nass, 1996), salience in web advertising, operationalized as motion features on a static background, could also attract involuntary attention.

Attention alone is not the whole story. It was shown that self-reported memory and attitude measures might underestimate the effects of banner ads (Meyers-Levy & Malaviya, 1999; Yoo, 2008). In advertising, although people may not consciously process the information to make a judgment, their attitudes and evaluations could still be influenced by the ads (Goodrich, 2011; Lee & Ahn, 2012; Ryu, Lim, Tan, & Han, 2007). Therefore, measuring just attention and recall may not provide adequate knowledge of effectiveness of salience in web advertising (Lang, 2000). Prior studies mostly focused on the influences of salient ads on attitudes towards the ad itself rather than measuring attitudes towards the products featured in the ad, which is critical in evaluations of the message’s effectiveness (Hamborg, et al., 2012; Lee et al. 2015). Further, while self-report may indicate the effects of ads on stated attitudes, such measures are incapable of assessing the likelihood that the newly formed attitudes will activate in the decision-making process (Fazio, 1990). To better understand the mechanism of automatically activated attitudes and decision-making, two major models, MODE Model and ELM are reviewed next.

Motivation and Opportunity as Determinants (MODE) Model and Implicit Attitude

The MODE Model examines attitude-behavior consistency and proposes two decision-making processes (Fazio, 1990). Fazio (1995) argued that attitudes should be viewed as associations between an object and a summary evaluation of the object.
Attitudes with a strong association can be activated more easily from the memory and are considered more easily accessible (Fazio, 2007, p. 608). The evaluative summaries can be outcomes of a passive associative learning process (Olson & Fazio, 2001) or a more active process of reasoning that involves “careful scrutiny of the validity of information regarding the attitude object” (Fazio, 2007, p.609). By viewing attitudes as associations varying in strength, Fazio et al. (1986) conceptualized the variability in associative strength as the “attitude-nonattitude continuum”. Individuals at the nonattitude end of the continuum do not have prior evaluative association to the object. In this case, due to novel entities of the information or individuals’ indifference to the object, no relevant attitudinal presentation is available from the memory.

At the other end of the continuum are the associations that are very strong and can be activated automatically from memory by mere exposure to the attitudinal object (Roskos-Ewoldsen & Fazio, 1992). Automatically activated attitudes are particularly critical in influencing judgment and behavior when individuals do not engage in effortful consideration of the presented objects. According to the MODE Model (Fazio, 1990), automatic activated attitudes are the “starting point” for our appraisals of the object. If people do not have the motivation or opportunity to further scrutinize the information related to the object, such attitudes will directly influence people’s subsequent judgment and behavior. If people have the motivation and opportunity to compare their appraisals against other knowledge and information they receive regarding the attitude object, the impact of the automatically activated attitude may be attenuated or be corrected (Fazio, 1990).
Based on Fazio’s previous conceptualizations of attitudes, Wilson, et al. (2000) differentiated between implicit attitude and explicit attitude. They proposed that both implicit and explicit attitudes are present in people’s memory, and can be accessed under different circumstances. Specifically, implicit attitudes can guide behavior when people do not have enough cognitive resources to retrieve the explicit attitude. Implicit measures assess automatically activated attitudes (Fazio, 1990). Such measures can provide better estimates of individuals’ attitudinal representations than explicit measures (Fazio, 2007). Implicit attitudes influence automatic and spontaneous responses to related objects and situations (Conner, Perugini, O’Gorman, Ayres, & Prestwich, 2007). Some scholars argued that such response had greater impact on consumers’ choices than more thought-out responses involving cognitive effort (Goodrich, 2011, Shiv & Fedorikhin, 1999). Implicit measures are particularly valuable when individuals’ responses are possibly influenced by social desirability or when individuals’ behaviors are guided by gut responses and they are unaware of the processes producing such response (Jordan, Logel, Spencer, Zanna, & Whitfield, 2008). Scholars argued that if individuals have the motivation and opportunity to deliberate on an issue, a high consistency between the explicit attitudes, measured by self-reports, and implicit attitudes can be observed (Goodall, 2011).

One implication of the MODE Model is that it can help understand attitudes in advertising research. For instance, if one has a negative association toward motion ads, and if the strength of association is strong enough, the presence of motion ads would spontaneously activate the negative attitude. The message recipient may immediately avoid watching motion ads, and probably may not even consider the advertised product.
as a favorable option next time they shop. If the association is not sufficiently strong, it will not activate an attitude to guide behavior even when people consciously think they do not like motion ads. Consequently, the strength of association can be used to infer both deliberate and spontaneous behaviors.

To assess implicit attitudes, Fazio, et al. (1986) developed primed response latency measures. In their study, Fazio et al. (1986) recorded the amount of time participants needed to correctly categorize positive and negative words after they were introduced to an object descriptor. The response time for people to associate the primed object with positive or negative adjectives will be shorter when people’s evaluations are congruent with the connotation of these adjectives than when people’s evaluations and the provided adjectives are incongruent. For instance, assuming that a person holds a sufficiently negative evaluation of the attitude object “cockroach,” a negative implicit attitude will be automatically activated by the presence of the word “cockroach.” If the individuals are later presented with a negative adjective (e.g., “bad”), they are able to associate cockroach to the connotation of the adjective more quickly than when they see a positive adjective (e.g., “good”).

Among different variations of implicit attitudes measures, the implicit Association Test (IAT) (Greenwald, et al., 1998) is the often used to measure the strength of associations among concepts (Nosek, Greenwald, & Banaji, 2007). The crucial part of IAT involves a categorization task. It focuses on the ease of categorizing negative versus positive words with the stimulus. In Greenwald et al.’s study (1998), the IAT measures assessed the association between a “target-concept discrimination” and “attribute dimension” (p.1465). First, participants were asked to categorize 25 recognizable first
names into two categories: White or Black. The concept discrimination was achieved by assigning one category to a response by the right hand and the other to a response by the left hand. Next, the attribute dimension was introduced. Participants were asked to categorize 25 pleasant words and 25 unpleasant words as positive or negative. In the third step, target discrimination and attribute dimension appeared on alternate trials. Black was paired with either positive or negative words and White was paired with either positive or negative words. Participants were asked to place these words into the appropriate category. The rationale is that if people have negative automatically activated attitude toward Blacks, it would be more difficult for them to place a Black name into the Black category when the category is paired with positive words. In the forth phase, participant repeated the target-concept discrimination, but this time the response keys were reversed. Finally, in the last phase, participants repeated the combined task with reversed categories. Was time to answer measured in this study? For instance, if Black was paired with positive words in the third phase, it would be paired with negative this time. Altogether, the IAT scores were indicative of positive or negative associations with the two racial groups. The study also measured people’s attitudes toward Black and White using a feeling thermometer and semantic differential measures. The results showed that the IAT measures were more sensitive to preference for White than self-reports.

Although the IAT is traditionally used in detecting stereotypes and racial preferences, some recent studies that used IATs provided a valid test of consumer preference (Vandeberg, Wennekers, Murre, & Smit, 2015; Venkatraman et al., 2015). Differences in response latencies for brands paired with positive and negatives words have been used to capture consumers’ preferences and attitudes (Dimofte, 2010). Prior
studies examining the effects of web ads also indicated that salience stimuli, such as motion features on a still background or colorful image on a pallid web page, can influence cognitive processing because they require more cognitive efforts (Wedel & Pieters, 2000). Although salience can lead to more attention, some studies showed that advertising messages could be unconsciously processed in low-attention conditions, which means that salience does not necessarily lead to positive outcomes (Goorich, 2011; Nordhielm, 2002). In addition, some research suggested that positive implicit attitudes could lead to higher purchase intention towards the advertised products (e.g., Auty & Lewis, 2004; Mandel & Johnson, 2002). The current study intends to see if individuals who see low salient web ads have more easily available implicit attitudes toward the product given that the descriptors of the product can facilitate associate learning via peripheral processing.

Elaboration Likelihood Model (ELM) of Persuasion

Cognitive psychology plays a significant role in developing various models proposed to understand message processing (Harrington, Lane, Donohew, Zimmerman, 2006; Rodgers & Thorson, 2000). These models provide powerful tools for practitioners and scholars to comprehend how advertisements are processed and evaluated, and offer further theoretical foundation to understand the effectiveness of persuasion (Rodgers & Thorson, 2000). The Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1981, 1986), in particular, has been a widely embraced dual-process model in advertising research and other related fields.

The ELM posits two routes of information processing: a more effortful “central route” and a less effortful “peripheral route” (Petty & Cacioppo, 1986). Message
recipients process information using either the central route or peripheral route, depending on individuals’ motivation (whether information is personally relevant and consequential) and ability (whether they have enough knowledge and resources to think) (Petty et al., 2002). Individuals who use the central processing route are more likely to form their attitudes after careful evaluations of the given messages. Peripheral processing occurs when people do not exert much mental effort and they avoid scrutinizing issue-related information (Petty et al., 2002). As opposed to central processing, attitude change via peripheral processing is invoked by simple cues in the persuasion context, such as source expertise (Petty, Cacioppo, & Schumann, 1983), and emotional status of message recipients (Petty, Schumann, Richman, & Strathman, 1993).

Specifically, for “central” processing to occur, both motivation and ability to view the message content have to be high. When either motivation or ability is low, individuals use “peripheral” processing in response to information presented (Petty et al., 2002). For instance, if the advertised product is not relevant to viewers, they are unlikely to actively process the message due to a lack of motivation. In addition, if viewers are distracted or preoccupied by other information, they cannot process the content centrally, because their ability is low. Besides motivation and ability, other related variables have been identified that can influence cognitive processing routes, such as “need for accuracy” (Kruglanski & Freund, 1983) and “fear of invalidity” (Sanbonmatsu & Fazio, 1990).

Although ELM does not suggest that the “peripheral” route is less effective than “central” processing in changing people's attitudes, it holds that the “central” route to persuasion may lead to more enduring attitudes that are less vulnerable to counter-arguments and more resistant to change (Petty & Cacioppo, 1981; 1986). The resistance
of an attitude over time can be regarded as an indicator of the effectiveness of persuasion. However, it should not be the only factor that taken into consideration in evaluation of ads’ effectiveness. Further, some advertising research suggested that implicit attitudes are strong and enduring (Shapiro & Krishnan, 2001) and low-elaboration conditions and spontaneous reactions might have greater impact on consumers’ purchase behaviors than high-elaboration conditions (Chow & Luk, 2006; Shiv & Fedorikhin, 1999). Thus previous research suggests that peripheral processing can also have a positive impact on people’s brand associated evaluations, especially at an unconscious level (Nordhielm, 2002).

Fazio (1990) proposed that implicit attitudes could be influenced through associative learning. Past research suggests that there is a link between the peripheral route in the ELM and associative learning in the MODE model (Wagner & Sundar, 2009). Associative learning, according to Fazio (1990), is “the direct connection of an object cue with a descriptor cue” (p. 81). In social psychology, the practices of utilizing the paired-associates learning procedure has been used in various experimental studies (Bornstein, 1989; Bornstein & D'Agostino, 1992; Zajonc, Markus, & Wilson, 1974). For instance, Burgess and Sales (1971) paired nonsense words with positive, neutral, or negative English words. With repeated exposure, nonsense words associated with positive words were rated more positively by participants while those paired with negative words were perceived more negatively. Smith and Decoster (2000) suggested that through repeated paring an initially neutral stimulus with a more meaningful stimulus, the presence of the neutral stimulus could evoke responses typically associated with the meaningful stimulus. Associative learning operates on paring a novel stimulus
“with an associate, in the form of a label, category, affective reaction, etc.” (Zajonc, et al., 1974, p. 250).

The ELM holds that attitude change does not always require effortful evaluations of the information provided. Instead, persuasion can still occur and people’s attitudes are more likely to be influenced by simple cues in the persuasion context. According to Soloman (1996), associative processing involves retrieving information that is associated with available cues present in the stimuli. Associative processing is “quick, intuitive, and relatively effortless (Smith & DeCoster, 1999, p.324). If the peripheral route is similar, if not identical, to associative learning, the strength of association between the object and evaluation should be enhanced with exposure to peripheral cues, which can be captured by implicit attitude measures. For instance, Wagner and Sundar (2009) examined the effects of celebrity and fear appeals in anti-drug ads, which were theorized to elicit the peripheral route of persuasion, on associative learning. They argued that associative learning is to “pair an object cue with a descriptor cue— e.g. table/blue or drug/bad” (p. 14). Celebrity disapproval and fear appeals in ads, by triggering negative associations with drugs, could lead to more implicit attitude change through associative learning. Such an effect was more salient when people processed the ads passively. Cho (2003) found that ad size as a peripheral cue had a greater impact on the banner ads click-through rates for people who had low involvement than those who had high involvement with the product. Weber, Dunaway, and Johnson (2012) examined message cues in campaign ads. Their study showed that a source cue had a significant impact on the persuasiveness of the campaign ads. Specific to web ads, if people form an association for a product using
the peripheral route, which means that they process the ads passively, their attitudes may be more likely to be influenced by the descriptors used to frame the ad.

To put it together, given ELM’s peripheral route and MODE’s theorization of implicit attitudes formation, whether greater attention can result in more or less positive associations with the products needs to be examined by measuring both implicit and explicit attitudes. If users can engage in associative learning, wherein the web ads connect the attitude object, in this case, the product, with positive descriptors, they may be able to form and strengthen the association for the product. Therefore, web ads that induce more associative learning can be more effective for people who undertake peripheral processing than those who process the ads centrally. Although we may not be able to operationalize central versus peripheral processing based on the content of an ad itself (Petty & Wagener, 1999), we can theoretically do so by manipulating the context in which an ad appears, such that when involuntary attention is drawn by salient ads, processing effort should be increased. The outcomes of associative learning can be inferred by people’s performances on the response latency measures of attitude, such as the IAT (Greenwald, et al., 1998). Based on the above, the following hypothesis are proposed:

**H1: Salient web ads will result in less favorable implicit attitudes, as compared to less salient web ads**

According to previous studies, under conditions where implicit attitudes have changed when ads are processed peripherally, changes in explicit attitudes have not been shown (Andriasova & Wagner, 2004). Even though peripheral processing has been demonstrated to influence implicit attitudes, explicit attitudes may not change. At present,
the theoretical psychological mechanisms underlying such phenomena are not completely clear. Therefore, a research question is then asked:

**RQ1: Are there any differences in explicit attitude between salient ads and less salient ads?**

It should be noted that brand familiarity could help develop a more favorable attitude toward the product, at an unconscious level (Krugman, 1977). In addition, people tend to have highly developed brand association structures for familiar brands than for less familiar ones (Low & Lamb, 2000). To avoid the influences of prior evaluative associations on processing of the ads, the current study used hypothetical brand ads.
CHAPTER 3: METHODOLOGY

In a two-condition, between-subjects design experiment, all participants ($N=47$) were invited to participate in one of two experimental sessions: one with a static ad and the other with a motion ad in a still web background. The only difference between the two conditions was presence (high salience condition) versus absence (low salience condition) of motion in the ads presented on a still background. After stimulus presentation, participants’ brand-related implicit and explicit attitudes were measured as dependent variables.

Participants were randomly assigned to one of the two conditions. To make sure that participants were randomly assigned to one of the study sessions, the researcher created a series of “ID numbers” beginning with “A” and “B,” wherein the letter “A” designated that participants were assigned to the salient group (salient group) and the letter “B” assigned participants to the less salient group. The ID numbers were placed in a plastic bag, and participants were instructed to blindly pick up a folded ID number from the bag.

Participants

A total of 47 undergraduate students, ages 19 to 39 ($M=21.96$, $SD=3.34$) enrolled in journalism classes at a major Mid Atlantic University comprised the sample. Students who participated in the experiment got course credit for participation.

In terms of the demographics, 16 of the 47 participants were men (34.0%) and the majority (70.2%) were seniors. All participants were asked to sign an informed consent form before they could participate in the study. The purpose, procedures, possible benefits, and risks of the study were explained in the consent form, as the Institutional
Review Board (IRB) required. Students were not provided with a specific explanation of the purpose of the study before participating. Participants were simply told that they were participating in a study examining the effects of media. After the experimental session, the participants were thanked and debriefed.

Stimulus Materials

An identical three-page news story with two versions of the web ad for a hypothetical energy drink, “Chrome Energy Drink,” was used as stimulus. The participants in the motion group viewed the ad with motion at the right sides of all three pages. The participants in the static group were presented with the static version of the ad placed in the same location on all three web pages.

The selection of “Chrome Energy Drink” as the advertised product was based on the consideration that as a hypothetical brand, “Chrome Energy Drink” should not generate viewers' preconceived attitudes toward both the product and the ads. In addition, as a product category, energy drinks are low cost and low involvement products (Olson & Zanna, 1993). Therefore, mere exposure to such product ads and attitudinal questions about the product should not increase people’s motivation to process the message centrally.

“Chrome Energy Drink” is a product whose logo and print ads were obtained from Brand Synchronicity, who designed them for the company. The product company had agreed that both the logo and print ad could be used as stimuli in the experiment. The web ads were constructed on the basis of its print counterpart. The static version of the web ad included product attribute words, brand logo, and product image (See Figure 1). The product attribute words were “Better Buzz,” “Better Taste,” “More Nutritious,”
“More Convenient,” “Higher Quality Ingredients,” and “Lower Price,” which were used in the IAT. Attribute words that IAT incorporated were employed as descriptor cues associated with “Chrome Energy Drink”. Prior research found that product main attributes are significant in a successful promotion strategy because they emphasized the benefits consumers seek when making purchases (Kempf & Smith, 1998).

The background of the static web ad was an endless highway. “All Nighter Tested Road Trip Approved” was placed on the top and product attribute words were shown underneath it. “More Nutritious” and “Better Taste” were on the left, “Better Buzz” and “More Convenient” were on the right, and “Lower Price” and “Higher Quality Ingredients” were in the middle. The attribute words took up the major part of the ad. Brand logo was shown at the left corner while a cup with the brand logo and filled with the energy drink stood at the right corner.

The motion ad included the same attribute words, brand logo, and product image. All elements were shown in same arrangement. However, in order to make it more salient to catch participants' involuntary attention, motion features - sequentially appearing product attributes, glowing brand logo and moving product image – were replaced on the static background in the motion group. However, prior studies had not reached a consensus on how much motion is optimal or how much is too much to exhaust people's cognitive capacity while salient enough to be attention-grabbing (Lai, Hui, & Liu, 2007; Sundar & Kalyanaraman, 2004). Therefore, the motion ad that was employed as the stimulus in the present study was created as close to an authentic motion ad that people would normally see online. It was designed using Adobe® Photoshop®. Based on the finding in previous study that objects moving toward or looming in front of people are
more likely to get immediate and the most attention (Reeves & Nass, 1996), in the motion condition, the product attribute words were moving toward the audiences one after another and looped every 4 seconds. The logo was constantly fading in and out. The cup was designed in a manner that was constantly moving from the left to the right during ad presentation.

Participants in both motion and static groups were asked to browse the web pages with a news article and a motion or static ad appeared on iMac computers with 27" monitors. The news article was obtained from the New York Times Travel page and was published online on Dec 20, 2010. The name of the article was “In Kanazawa, Japan, Ancient Beauty Fuses With Modern Art,” which discussed the natural and historical sights in the city of Kanazawa. This article was chosen because the topic was relatively neutral. Thus it could reduce the possibility that participants' attitudes toward the ads were tempered to some extent by their positive or negative predispositions toward the news.

The web page simulated the New York Times Travel page, with the exact same web design except that both banner ads and other on-site ads were removed and replaced with “Chrome Energy Drink” message at the right side of each page, either with a motion or static ad.
To test the relative effects of salience on web ads effectiveness, the independent variable, salience, was operationalized as containing two levels: an ad with motion features on the static background (salient) and an ad without motion features on the static background (less salient).

Dependent Variables

Implicit Attitude. A pencil-and-paper variation of the IAT (Greenwald et al., 1998) was used to evaluate product-related implicit attitudes. The measure constituted five separate timed judgment stages. During each stage, participants would see a list of...
words down the center and columns on either side. The words were judgment items. Evaluations were made by checking the appropriate right or left-hand columns. The participants were asked to categorize the names on the list following instructions indicated on the page in 15 seconds. The instructions were also given orally by the researcher.

Before participating in the judgment stages, participants were exposed to four lists of words two of a time. The first set of lists included names of both product-related words and colors. The second set included both positive and negative adjectives. The participants were asked to take as much time as they needed to familiar themselves with the words to prepare for the later categorizing tasks.

The list of product-related words included the following: taste, ingredient, convenient, price, buzz, fountain, quality, and nutritious. The list of colors contained blue, red, orange, pink, green, yellow, purple, and grey. The original IAT test used two pairs of target attitude concepts, flower names and insect names, for which “participants were expected to have relatively uniform evaluative associations” (Greenwald, et al., 1998, p. 1466). The current study used color names because participants are expected to have comparatively neutral evaluations of colors. Such manipulation has also been shown successful in prior research in gauging implicit ad attitudes (Wagner & Sundar, 2009).

The positive adjectives in the measure were good, favorable, valuable, nice, acceptable, wonderful, pleasant, and excellent. The negative adjectives were bad, unfavorable, worthless, awful, unacceptable, horrible, unpleasant, and poor. All words listed later appeared in the association tasks.
A total of three phases of the practice stage were conducted during the experiment. The first two took place at the very beginning, in which participants were asked to familiarize themselves with the activity of categorizing words. In the first of these practice stages, a list down the center and columns on either side labeled COLORS and CHROME ENERGY (the name of the product) appeared on the page. The participants were given 15 seconds to go down the list and categorize the names. They would check the left side of the page if the word was a COLOR and the right side of the page if it was a product-related word. The following figure is an example of the first practical stage in the IAT.

<table>
<thead>
<tr>
<th>COLORS</th>
<th>CHROME ENERGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td></td>
</tr>
<tr>
<td>TASTE</td>
<td></td>
</tr>
<tr>
<td>PURPLE</td>
<td></td>
</tr>
<tr>
<td>GREY</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2. IAT Practice Stage 1*

The second stage is similar to the first, except that the positive and negative words would replace COLOR and CHROME ENERGY on the previous page. The following figure is an example of the second practical stage in the IAT.
The practice stage was followed by the critical judgment phase, which was used to assess implicit attitudes. It included four sets of words. The list began with either positive or negative adjectives or a product-related word or color name, and the following word from the opposite category. To be specific, within the critical judgment phase, participants were first given 15 seconds to check the left side of the page when the words were either COLORS or positive words and check the right side if the words were CHROME ENERGY or negative words. The following is an example of the first critical judgment phase in the IAT.

**Figure 3. IAT Practice Stage 2**

<table>
<thead>
<tr>
<th>positive</th>
<th>negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>favorable</td>
<td></td>
</tr>
<tr>
<td>worthless</td>
<td></td>
</tr>
<tr>
<td>pleasant</td>
<td></td>
</tr>
<tr>
<td>unacceptable</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4. IAT Critical Judgment Phase 1**

<table>
<thead>
<tr>
<th>COLORS OR positive</th>
<th>CHROME ENERGY OR negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUALITY</td>
<td></td>
</tr>
<tr>
<td>valuable</td>
<td></td>
</tr>
<tr>
<td>ORANGE</td>
<td></td>
</tr>
<tr>
<td>unacceptable</td>
<td></td>
</tr>
<tr>
<td>PINK</td>
<td></td>
</tr>
</tbody>
</table>
On the next page participants were instructed to do the same thing as they did on the previous one. They checked the left side of the page the word was COLORS or positive, and the right side if the word was CHROME ENERGY or negative. After that, another practice stage was conducted. Only this time the positions of the two categories “CHROME ENERGY” and “COLORS” were reversed. The following is an example of the third practice stage in the IAT.

<table>
<thead>
<tr>
<th>CHROME ENERGY</th>
<th>COLORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUALITY</td>
<td></td>
</tr>
<tr>
<td>GREY</td>
<td></td>
</tr>
<tr>
<td>FOUNTAIN</td>
<td></td>
</tr>
<tr>
<td>BLUE</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 5. IAT Practice Stage 3*

The fifth stage was again a critical judgment phase. This phase was almost identical with the third stage except that the appropriate side for the product-related words and color names was switched. Participants put a check on the left side of the page if it was either a CHROME ENERGY or a positive word and a check on the right side if it was a COLOR or a negative word. The following is an example of the third critical judgment phase in the IAT.
Finally, on the next page, participants were asked to do the same thing as they did on the previous one. They checked the left side of the page if the word was CHROME ENERGY or positive, and the right side if the word was COLOR or negative.

Explicit Attitude. After assessing implicit attitudes, a pencil-and-paper questionnaire containing eight five-point semantic differential scales anchored by positive and negative adjectives, including good/bad, pleasant/unpleasant, valuable/worthless, favorable/unfavorable, acceptable/unacceptable, nice/awful, wonderful/horrible, and excellent/poor, were administrated to measure self-reported, explicit attitudes (Palmgreen, Donohew, Lorch, Rogus, Helm, & Grant, 1991)

Control Variables

The study also measured two control variables: age and gender. These variables could affect users’ processing of web ads.

Procedure

The experiment was administrated in a laboratory setting that was equipped with computers. The experiment was conducted in sessions. Each session took approximately 30 minutes during which participants were given instructions to read the online article,
and then to respond to both implicit and explicit measures. Owing to the limitation of the laboratory environment, only two participants could take part in the study in one session.

All oral instructions during the experiment were given according to an experimental protocol. The researcher was required to read the protocol in order to maintain the study's integrity in every session. Considering the complexity of IAT, a copy of the IAT protocol was provided for the researcher to give identical instructions in every single session and to make sure participants understood what task they were asked to perform.

Upon arrival, participants were greeted by the researcher and told that the study was about the effects of media. They were then presented with consent forms, which explained their rights as research participants. The consent forms described that the purpose of the study could not be explained in detail until the study was finished. After they signed the consent forms, participants were instructed to draw a piece of paper with their identification (ID) number, which indicated their condition assignment, from a bag. Participants were told that they could check the ID number as soon they picked it, but they should not tell anyone else, researcher included, what it was.

The experimental procedures were the same in both conditions. After checking out their ID numbers, participants were instructed to open a web link that was shown on the desktop of their computers with the name that matched the first letter of their ID numbers, either “A” or “B.” For participants whose ID numbers started with “A,” the news pages were shown with a motion ad. Those whose ID number started with “B” were exposed to the same news article with the static ad.
The participants were then given oral instructions before they viewed the web pages, asking them to read the page as they would normally read a web page and click “NEXT” when they finished reading the content of each page. The instructions were also shown as soon as participants opened the web link on their desktops, which would lead them to the stimulus.

At the bottom of the instruction page, there was a hyperlink, “NEXT,” which would take the participants to the New York Times Travel page with ads that were designed for the experiment. The web pages did not allow participants to go backward, so once the participants clicked “NEXT,” they could not go back. Also other links that appeared on all web pages were deactivated and static. On the last web page, participants would see an instruction asking them to nod to the researcher if they had finished reading the news article. When both participants indicated that they had completed the task, the researcher began distributing the implicit attitude measure. After participants finished the implicit attitude measure, they were instructed to complete the paper-and-pencil version of the explicit attitude measure. After participants had filled out the measure, they were informed of the intent of the research and were asked not to talk to other participants concerning the experiment to maintain the integrity of the study.

Data Analyses

The data was analyzed using SPSS version 21.0. First, for IAT, the number of correctly categorized words in the “critical judgment phase” was summed across the two trials to form an index. The index of brand-related words paired with negative adjectives was subtracted from the index of brand-related words paired with positive adjectives to create an implicit attitude index. For self-reported attitudes, the eight items were summed
with equal weighting to form an explicit attitude index (Cronbach's $\alpha = .92$). The frequency and distribution of the data were examined. Second, the implicit attitude index was entered into an independent-samples $t$-test as a dependent variable, with condition as the independent variable. The explicit attitude index was entered into an independent-samples $t$-test as a dependent variable, with condition as the independent variable. Finally, to answer the research question and test if the explicit attitude differed between salient and less salient ads, an independent-samples $t$-test with condition as the independent variable and explicit attitude index as the dependent variable were added.
CHAPTER 4: RESULTS

Descriptive Statistics

The data was screened for the normality distribution and missing values. Based on the shape of the histogram and Shapiro-Wilk W test, the two dependent variables, implicit and explicit attitude indexes were normally distributed. Also, less than 5% of the data was missing, so there were no serious problems caused by missing values (Tabachnick & Fidell, 2007).

Hypothesis Testing

To test the hypothesis, the mean scores of the implicit attitude index were compared between two conditions (See Table 1). The result indicated that people in the salient ad group ($M = 3.95, SD = 3.35$) did not have significantly less positive implicit attitude toward the product than people who saw the less salient ad ($M = 3.00, SD = 3.52, p > .05$). $H_1$ was not supported.

Table 1

*Independent t-test*

<table>
<thead>
<tr>
<th></th>
<th>Salient Ad (N = 22)</th>
<th>Less Salient Ad (N = 25)</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Attitude</td>
<td>3.95</td>
<td>3.00</td>
<td>-.95</td>
<td>.35</td>
</tr>
<tr>
<td>Explicit Attitude</td>
<td>3.24</td>
<td>3.28</td>
<td>.17</td>
<td>.86</td>
</tr>
<tr>
<td>Implicit Negative</td>
<td>10.55</td>
<td>11.72</td>
<td>1.05</td>
<td>.30</td>
</tr>
<tr>
<td>Implicit Positive</td>
<td>14.50</td>
<td>14.72</td>
<td>.20</td>
<td>.84</td>
</tr>
</tbody>
</table>
The scores of the first two critical phases in the implicit measures, where the product words were grouped with negative words, were calculated to evaluate if people had difficulty associating the product with negative adjectives. The index was labeled Implicit Negative. The scores of the other two critical phases in the implicit measures were also summed as an indicator of how well people did when product words were grouped with positive adjectives. The index was labeled Implicit Positive. An independent sample t-test was performed using the condition as the independent variable and the two indexes, Implicit Negative and Implicit Positive, as the dependent variables. The results showed that salient \((M = 11.72, SD = 3.04)\) and less salient ads \((M = 10.55, SD = 4.55)\) did not differ significantly in terms of their impacts on Implicit Negative attitudes \((p > .05)\). In addition, the Implicit Positive scores did not differ significantly between the salient group \((M = 14.72, SD = 3.59)\) and less salient group \((M = 14.50, SD = 3.83)\). Finally, to answer the research question, an independent-samples t-test with condition as the independent variable and explicit attitude index as the dependent variable was conducted. The result indicated that people who read the news article with the salient ad \((M = 3.24, SD = .76)\) did not have significantly more positive explicit attitude toward the product than those who saw the less salient ad \((M = 3.28, SD = .56, p > .05)\). The result also showed that people’s implicit attitude and explicit attitudes were not correlated significantly \((r = .001, p > .05)\) (See Table 2).
Table 2

*Correlations of Dependent Variables*

<table>
<thead>
<tr>
<th></th>
<th>Implicit Attitude</th>
<th>Explicit Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Attitude</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>Explicit Attitude</td>
<td>.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The findings may be partially due to the small sample size for each condition, and the exposure time to the ads was comparatively short. Possible interpretations of the results are further explained in the discussion.
CHAPTER 5: DISCUSSION

Interpretation of Findings

The results suggested that salient ads -- motion ads in a static online environment -- did not lead to less favorable implicit attitudes than less salient ads, leaving $H_1$ unsupported. In addition, explicit attitudes toward the product did not differ significantly between the salient group and the less salient group.

Salience stimuli are theorized to trigger strong orienting responses and impose greater cognitive load on web users (Heo & Sundar, 2001; Lang et al., 2002), in addition to catching people's involuntary and automatic attention (Kardes, 2001). The current study hypothesized that the salience of the stimuli can affect information processing, either through the “central” or “peripheral,” route (Petty & Cacioppo, 1981). Connecting ELM and MODE through associative learning, the study proposed that when positive product cues were provided, people were more likely to be influenced by these cues if they were exposed to less salient ads, at least at the implicit level (Smith & DeCoster, 1999). Prior studies also showed that salient ads, by eliciting more “central” processing, led to less persuasion at the implicit level (Wagner & Sundar, 2009). The study intended to examine the effects of salient ads on explicit attitudes and tested if explicit attitudes toward salient and less salient web ads differed. However, the hypothesis was not supported by the experimental investigation. Several explanations for these findings then should be considered.

First of all, it is possible that the speed of motion influences the effects of salient ads. Motion in web ads should be salient enough in order to catch users’ attention, and while not too fast to exhaust audiences' limited-processing capacity (Lang, 2000).
However, different measures and definitions of the optimum speed of motion provided in previous studies increased the difficulty to operationalize the optimal motion speed and amount (Lee & Ahn, 2012). Previous studies showed that while fast-animation speeds (averaging 55 flashes per minute) were more attention grabbing and more physiological arousing than slow-animation speeds (averaging 21.5 flashes per minute), slow-paced animated ads were more effective in increasing the overall appeal of the web site (Sundar & Kalyanaraman, 2004). Although some research showed a positive correlation between the speed of motion and ads effectiveness (e.g. Lai, el al., 2007), the finding suggested that the speed of motion should be tested as a moderator in examining web ads effects (Sundar & Kalyanaraman, 2004). Similar studies in motion speed effects had different findings. For example, Yoo and Kim (2005) found that the level of motion and the amount of attention allocated to the ads were positively and linearly related (Yoo & Kim, 2005). However, it was not clearly defined in the study that how fast should be considered “moderate” and “high” speed. It is possible that the speed of motion in the salient web ad in the current study was not fast enough to draw sufficient amount of participant attention thus producing no difference in effects on attitudinal outcomes.

The second possible explanation of the findings is that processing of the news article might have affected the processing of a web ad. In both conditions, some participants might have been more motivated and capable of processing the news article that was shown on their computer screen. If web users read the news carefully, they might be processing the material in the article centrally. As a result, most of the cognitive resources may have been involved in processing the information in the news article. As a result, it is possible that in both conditions, the ads were processed peripherally.
Therefore, it is also important to pay attention to the context where the ads are presented, because the web content can affect processing of the ads. For instance, in a gaming platform, motion ad in a static background may not attract users’ attention when processing of features of on-line games asks for cognitive efforts.

Theoretical Implications

Salience in web advertising has not been conceptualized uniformly. Salience was characterized as changes from the background (Lang, 2000; Kardes, 2002). It has been operationalized variously in advertising research, such as distinctiveness (Grier & Deshpandé, 2001) and visual complexity (Norris, Bailey, Bolls, & Wise, 2012). The current study focuses on motion ads in a still web background, which constitutes salience. Previous studies suggested that the use of motion had little influence on improving viewers' brand recall and recognition (e.g. Bayles, 2002). Such research shed little light on web ads effects, because the conclusion mainly relied on self-reported attitude measures, which is insufficient to reveal any non-deliberative or unreasoned decision-making (Ackermann & Mathieu, 2015). Therefore, measuring both implicit attitudes and explicit attitudes of web ads for users in the present study should have been more helpful in understanding the effects of salience web ads.

Originally, Petty & Cacioppo (1986) proposed that attitude change as a result of central processing is more persistent, and such attitudes are stronger predictors of behavior. Meanwhile, MODE suggested that although explicit attitudes can be more predictive of decisions made with great deliberation, implicit attitude are more predictive of decisions made without much cognitive effort (Dovidio & Fazio, 1991, Fazio, 1990). In addition, in the field of psychology and neuroscience, studies have shown that the vast
majority of people's decisions are made without much elaborated thought (Heath & Felwick, 2007). It is can be inferred that although people assume that they think rationally and behave accordingly, in most cases, their behaviors are largely influenced by information that they may not consciously process. According to this rationale, attitudes that are formed as the result of central processing may be more influential when people make decisions deliberately. In other situations, in which either motivation or resources to process information is insufficient, implicit attitudes can guide behaviors (Chaiken & Trope, 1999). Without measuring participants' subsequent behavior, the current study cannot test if implicit attitude is more predictive of behavior. Nevertheless, the current study emphasized the necessity to measure implicit attitudes and the use of unobtrusive measures in evaluation of web advertising.

Previous research suggests that persuasion can occur even when people are not conscious of it (e.g. Bargh, Schwader, Hailey, Dyer, & Boothby, 2012; Fitzsimons, et al., 2002; O'keefe, 2015; Roskos-Ewoldsen & Fazio, 1992). Some researchers connected the ELM and MODE models, and argued that peripheral processing can help associative learning (Smith & DeCoster, 1999). In the context of web ads, if positive product cues are provided, people may be more likely to be influenced by these cues if they are exposed to low salience ads because processing of such messages may not require much cognitive effort. In this case, low salience ads may lead to better implicit attitudes than high salience ads, and thus may result in better ad effectiveness. The result also showed that people did not exhibit more positive attitudes toward the product when they saw the salient ads than the less salient ads, indicating that the use of motion in a static background was not efficient in generating better persuasive outcomes.
The current study is built on the rationale that salience can affect the information processing route. Although the current study fails to support the proposed hypothesis, it connects salience, MODE Model and ELM. Besides motivation and ability, prior research also suggested the role of source, message factors, and recipient factors in affecting the amount of thinking, serving either as characteristics of arguments or peripheral cues (e.g. Chaiken & Maheswaran, 1994; Chen, Shechter, & Chaiken, 1996; Hastall & Knobloch-Westerwick, 2013; Pallak, 1983). The current study focused on salience of the ads and tested if a motion ad in a static context is a sufficient condition for central route processing. It showed that other message variables, which have not been studied with great depth yet, may have potential influence on cognitive processing.

Practical Implications

Scholars in marketing and advertising research suggest that consumers think carefully and analytically when forming attitudes and making decisions; however, this might not be the best way to understand consumer behavior (Ackermann & Mathieu, 2015; Maison, Greenwarld, & Bruin, 2001). Especially when people’s cognitive abilities are reduced when making decisions, implicit attitude is more predictive of behaviors (Ackermann & Palmer, 2014; Gibson, 2008). Salient web ads, by capturing people's involuntary and automatic attention, can be more cognitively taxing than less salient ads (Greenwald & Leavitt, 1984; Nisbett & Ross, 1980). Therefore, measuring implicit attitudes can be more beneficial in understanding viewers’ responses to both the products and the ads. The result may be especially instructive for advertisers to understand the effectiveness of the use of motion in web ads. Since the current study did not find any difference in effects of salient and less salient ads on implicit attitudes, it is possible that
when the people do not have prior exposure to the product, salience does not have significant impact on the associative learning. Measuring implicit attitudes can provide better understandings of people’s brand and product attitudes when their attitudes vary in strength. If ads can enhance the strength of association of the product, and thus influence people’s implicit attitudes toward the product, people are more likely to purchase the product, especially when they do not have the opportunity or motivation when making the decision.

Despite the fact that the main interest of the current study is not motion effects, the results indicated that the effects of motion used in advertisements might be exaggerated. In particular, previous studies using self-report measures on motion ads showed mixed findings. It has been demonstrated that animated banner ads performed better in catching viewers' initial attention than static ones, and they were effective in facilitating quicker responses and better recall than their static counterparts (Li & Bukovac, 1999). However, Detenber and Reeves (1996) suggested that the absence of motion, rather than the presentation of motion, would result in greater automatic arousal or emotional intensity. On one hand, the amount of attention allocated to ads is positively associated with the level of animation (Yoo & Kim, 2005). On the other hand, some studies suggested that motion ads have lost novelty during people's daily web-surfing experience as users begin getting accustomed to an increasing amount of motion in the online environment (Diao & Sundar, 2004). The results of the current study indicate that participants in the salient group do not present significantly more positive explicit attitudes than those who were in less salient group. It can be concluded that although advertisers may perceive the use of motion in the online environment effective in terms
of generating more positive attitudes toward ads (Heo & Sundar, 2000), the current study shows that explicit attitudes did not vary significantly among participants when they saw motion ads and when they did not. It is possible that motion alone is not novel and innovative enough to facilitate a more enjoyable online experience. Other technological affordances, such as interactivity and navigability may be viewed more positively (Sundar, 2009). Motion features in web ads should be used more creatively to generate more attention and more positive explicit attitudes. For instance, the ads can use motion with other persuasive tactics such as humor and story-telling. Motion can also be combined with other salience manipulations, such as colors and visual complexity.

Limitations and Future Research

The current study hypothesized that salient ads, motion web ads in a static context, seize people's automatic attention so that they consequently consume more cognitive effort to process information presented. All of this is similar to the way the central route to persuasion works. One limitation of the experimental design is that cognitive processing was not measured as evidence to show that participants who saw motion ads in static context exhibit more central processing than those who saw static ads in the same context. Particularly, as noted earlier, it is possible that the processing of accompanying information (e.g. news in the current experiment) may influence the subsequent processing of other stimuli (such as salient ads). Therefore, future research should measure information processing, such as using thought-listing (Cacioppo, Von Hippel, & Ernst, 1997) as a mediating variable of salient ads effects. It is also helpful to understand the cognitive mechanism of web ads salience by testing relevant mediating variables, such as engagement and involvement.
In addition, because the present study used a product ad that has not been seen in the market, the experiment did not include a control group as a baseline measure of implicit and explicit attitudes. Although the aim of the study is not to show implicit and explicit attitude changes, future studies may use ads of existing brands and products to offer more comprehensive knowledge of the persuasive effects of salient web ads. The study also used college students as the study sample. It is possible that college students are more familiar with motion features since they are more experienced web users than other age groups. The manipulation of salience may be more successful when using a more diverse population. Future study should test the salience effects on other age groups.

Finally, given the rapid changes in communication technology, users are constantly engaged in activities that require their cognitive efforts, such as multi-tasking. Users are getting more and more familiar with changes in the web environment. For instance, when they use social media sites, they can use various functions to view videos and share content. One possible limitation of the study is that in today’s online world, experienced users may not find motion ads in a still background salient. Such a possibility may blur the difference between the effects of salient and less salient ads. However, from a theoretical point of view, the study tested if associated learning is similar to the process where individuals are influenced by contextual cues in an ad when proceeding via a peripheral route. If this is the case, advertisers can change people’s implicit attitudes by manipulating their processing route and contextual cues in the web ads. From a practical standpoint the results of the current study suggest that advertisers who want to develop a strong object-evaluation association should choose media
platforms that can distract users, such as online games, and use heuristics cues, such as celebrity endorsement and credible source. Such effects should be further examined by future studies.
REFERENCES


APPENDIX A: IMPLICIT ATTITUDES MEASURE SAMPLE

ID #: ____________

PLEASE DO NOT OPEN UNTIL THE RESEARCHER ASKS YOU TO DO SO.

THANK YOU!!!
<table>
<thead>
<tr>
<th>CHROME ENERGY</th>
<th>COLORS</th>
</tr>
</thead>
<tbody>
<tr>
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<td>BLUE</td>
</tr>
<tr>
<td>BUZZ</td>
<td>ORANGE</td>
</tr>
<tr>
<td>CONVENIENT</td>
<td>PINK</td>
</tr>
<tr>
<td>PRICE</td>
<td>GREY</td>
</tr>
<tr>
<td>QUALITY</td>
<td>BROWN</td>
</tr>
<tr>
<td>TASTE</td>
<td>YELLOW</td>
</tr>
<tr>
<td>INGREDIENTS</td>
<td>PURPLE</td>
</tr>
<tr>
<td>FOUNTAIN</td>
<td>RED</td>
</tr>
</tbody>
</table>

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<th>Negative</th>
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</thead>
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<td>bad</td>
</tr>
<tr>
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<td>unpleasant</td>
</tr>
<tr>
<td>valuable</td>
<td>worthless</td>
</tr>
<tr>
<td>favorable</td>
<td>unfavorable</td>
</tr>
<tr>
<td>acceptable</td>
<td>unacceptable</td>
</tr>
<tr>
<td>nice</td>
<td>awful</td>
</tr>
<tr>
<td>wonderful</td>
<td>horrible</td>
</tr>
<tr>
<td>excellent</td>
<td>poor</td>
</tr>
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</table>

STOP. DO NOT CONTINUE!
COLORS

RED
TASTE
PURPLE
GREY

INGREDIENTS
PINK
BUZZ

NUTRITIOUS
BLUE

CONVENIENT
PRICE

ORANGE
YELLOW

FOUNTAIN
BROWN
QUALITY

STOP! DO NOT CONTINUE!
positive  
favorable
worthless
pleasant
unacceptable
wonderful
bad
unpleasant
valuable
unfavorable
excellent
awful
good
horrible
acceptable
nice
poor

negative
<table>
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<th>CHROME ENERGY OR negative</th>
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</thead>
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</tr>
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<tr>
<td>CONVENIENT</td>
<td>horrible</td>
</tr>
<tr>
<td>INGREDIENTS</td>
<td>pleasant</td>
</tr>
<tr>
<td></td>
<td>BROWN</td>
</tr>
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<td></td>
<td>unpleasant</td>
</tr>
<tr>
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</tr>
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</tr>
<tr>
<td>PURPLE</td>
<td>unfavorable</td>
</tr>
<tr>
<td>PRICE</td>
<td>good</td>
</tr>
<tr>
<td>YELLOW</td>
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</tr>
</tbody>
</table>

STOP. DO NOT CONTINUE!
COLORS OR positive
CHROME ENERGY OR negative

unfavorable
BROWN
excellent
PRICE
bad
NUTRITIOUS
wonderful
YELLOW
poor
CONVENIENT
worthless
FOUNTAIN
horrible
BLUE
pleasant
RED
acceptable
TASTE
unpleasant
INGREDIENTS
good
GREY
nice
PURPLE
favorable
BUZZ
unacceptable
QUALITY
awful
PINK
valuable
ORANGE

STOP! DO NOT CONTINUE!
QUALITY
GREY
FOUNTAIN
BLUE
CONVENIENT
BROWN
TASTE
ORANGE
BUZZ
PINK
PRICE
PURPLE
NUTRITIOUS
YELLOW
INGREDIENTS
RED

STOP! DO NOT CONTINUE!
CHROME ENERGY OR POSITIVE

FOUNTAIN
  good
RED
  excellent
PRICE
  horrible
CONVENIENT
  valuable
YELLOW
  poor
TASTE
  nice
PINK
  unpleasant
BROWN
  favorable
NUTRITIOUS
  acceptable
BLUE
  awful
INGREDIENTS
  bad
GREY
  wonderful
ORANGE
  unfavorable
BUZZ
  unacceptable
PURPLE
  pleasant
QUALITY
  worthless

COLORS OR NEGATIVE

STOP! DO NOT CONTINUE!
awful
QUALITY
good
FOUNTAIN
acceptable
YELLOW
unfavorable
CONVENIENT
valuable
GREY
bad
INGREDIENTS
nice
RED
unpleasant
PINK
wonderful
TASTE
horrible
BLUE
excellent
BROWN
poor
NUTRITIOUS
pleasant
ORANGE
favorable
BUZZ
unacceptable
PURPLE
worthless
PRICE

STOP! DO NOT CONTINUE!
APPENDIX B: EXPLICIT ATTITUDES MEASURE SAMPLE

Below is a list of word pairs. Circle one of the numbers near the word in each pair that best describes how you feel about the following statement:

“I think Chrome Energy drink is...”

<table>
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<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>bad</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>4</td>
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<td>unpleasant</td>
</tr>
<tr>
<td>3</td>
<td>valuable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tr>
<tr>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>unfavorable</td>
</tr>
<tr>
<td>5</td>
<td>acceptable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>unacceptable</td>
</tr>
<tr>
<td>6</td>
<td>nice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>awful</td>
</tr>
<tr>
<td>7</td>
<td>wonderful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>horrible</td>
</tr>
<tr>
<td>8</td>
<td>excellent</td>
<td>1</td>
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