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The moderating role of trust in the Internet on online ad and brand attitude formations

Abstract

The impact of trust in the Internet is examined to assess its impact on the formation of online ad and brand related attitudes. Using a number of banner ads on a mock website, trust in the Internet, brand and ad cognitions and brand and ad attitudes are measured. Modeled after the dual mediation hypothesis of advertising effects, a moderating effect of trust is specified and tested, suggesting that low levels of trust would result in a weaker link between cognitions and attitudes. These hypotheses are supported; however the dual mediation model is not supported. Managerial implications include the necessity to use trust in the Internet as a targeting attribute, using more emotional appeals and peripheral cues in messages targeted to those with low levels of trust in the Internet.

Keywords: interactive advertising, banner ads, ad attitude, brand attitude, trust in the Internet.

Introduction

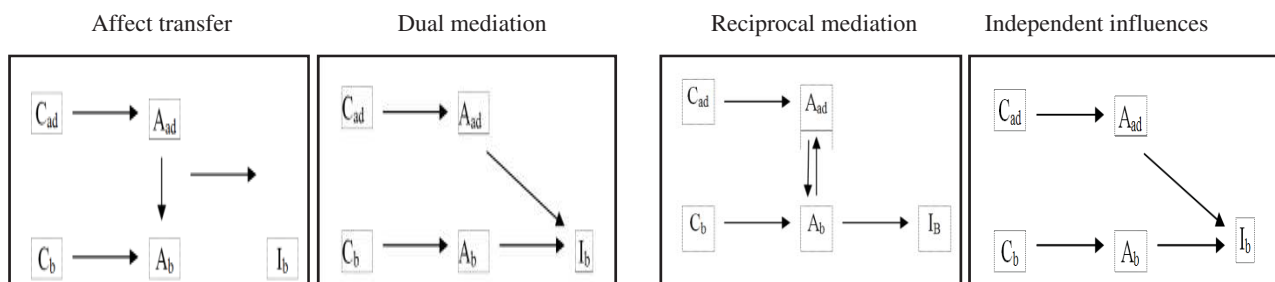
Internet banner advertising has become one of the most prominent forms of advertising. However, because of the nature of such an open network such as the Internet, the trustworthiness of the medium is often questioned. Without a doubt, there is variance in the level of trust engendered by the Internet across consumer segments, but it is unclear what impact trust has on information processing. This manuscript addresses this issue by studying the impact of trust in the medium on advertising using established models of attitude change. Drawing upon works that address hierarchy of effects issues, we suggest that trust in the medium, and in this case, trust in the Internet, drastically alters the hierarchy of effects model, primarily, the formation of attitudes based on cognitions.

1. Literature review

In order to assess the moderating effect of the trust in the Internet on the relationship between the cognition and attitude towards advertising, we will first focus on a well established stream of research based on the hierarchy of effects perspective of attitude change. Specifically, four alternative structural specifications of the mediating role of attitude toward advertisement (A_{ad}) are examined. Second, based on the

literature review, we develop our conceptual model to test the moderating effect of the trust in the Internet.

1.1. Cognitions about the banner ad and brand (C_{ad} and C_b). Based on hierarchy of effects models, we should see the general path of cognition \rightarrow affect \rightarrow conation, i.e. thought, feeling, and action (Smith and Swinyard, 1988; Ajzen and Fishbein, 1980). Various authors have suggested that attitude and cognition variables are related (e.g. Gardner, 1985; Mitchell and Olson, 1981; Howard, 1977). The main focus of discussion has concerned the manner in which cognitions about the advertisement (C_{ad}) and brand (C_b) interact with attitudes about the advertisement (A_{ad}) and brand (A_b), as well as with intent to purchase the advertised brand (I_b). In past research, four hypotheses, as shown in Figure 1, have been proposed relating to the interactions between these variables. These hypotheses are: (1) affect transfer; (2) dual mediation; (3) reciprocal mediation; and (4) independent influences. These four hypotheses have been independently evaluated by different researchers (MacKenzie, Lutz and Belch, 1986; Homer, 1990), and in all cases, similar conclusions were reached. Detailed discussion of each of the four models can be found in the aforementioned cites.



Source: MacKenzie, Lutz and Belch (1986) and Homer (1990).

Fig. 1. Four alternative structural specifications of the mediating role of A_{ad}

These four alternative hypotheses have been studied extensively (MacKenzie, Lutz and Belch, 1986; Homer, 1990). Using an experimental design and structural equation modeling, MacKenzie, Lutz and Belch (1986) found that the dual-mediation hypothesis was the best model. Homer (1990) then replicated this study, again using an experimental design and structural equation modeling, and she came to the same conclusion; the dual mediation hypothesis appeared to be the best way to describe the relationships between cognition, attitude and behavior. Since then, the dual mediation hypothesis has gained acceptance as evidenced by its use in further studies on A_{ad} and A_b (e.g. Miniard, Bhatla, and Rose, 1990; Brown and Stayman, 1992; Coulter and Punj, 1999).

Based on these previous findings, we suggest the following hypotheses:

H1a: More positive C_{ad} will lead to higher A_{ad} .

H1b: Higher A_{ad} will lead to more positive C_b .

H1c: More positive C_b will lead to higher A_b .

H1d: Higher A_{ad} will lead to higher A_b .

There is sufficient evidence of the impact of brand attitude on purchase intent; therefore, we do not include purchase intent in our model, as it would add little to the literature on the subject.

1.2. Trust in the Internet. In marketing literature, trust has taken on many forms. The majority of the literature focuses on person-to-person trust, or organization-to-organization trust. Very few studies have been performed on person-to-organization, and even fewer have looked at person-to-technology trust (Lee and Turban, 2001). However, it seems that the level of trust one has with the medium of interest would be a strong indicator of their likelihood to accept any advocacies made via that medium. According to Wright's (1973) work on cognitive processes in ad acceptance, there are three main categories of cognitive response to ads: counterarguments, source derogation, and support arguments. Counterarguments occur when incoming information is in conflict with existing beliefs. This internal discrepancy is often dealt with immediately by neutralizing the message arguments. In this case, no attitude change occurs, because the counterarguments effectively negate the advocacy statements made in the advertisement. Source derogation occurs when the source of the message argument is easily viewed as biased or unqualified. This source derogation can apply to the actual source of the message, or to a more general target such as the sponsoring organization or even advertising in general.

Since we believe that source derogation will have a negative impact on cognitive response to an ad, it makes sense that if the source is not trusted, any ad or brand cognitions that are generated from exposure are quickly neutralized. Further, since source derogation can apply to general entities such as organizations or institutions, we believe that it can occur as related to the Internet in general. That is, if one does not trust the Internet as a source of accurate and reliable information, then message arguments made through the Internet will be subject to source derogation and, therefore, substantially weakened.

Another way to look at the impact of trust in the Internet on cognitive processes is an examination of the Elaboration Likelihood Model (Cacioppo and Petty, 1985). In order for cognitive processing to effect attitude change, there must be a cognitive structure change. That is, new cognitions must be adopted, not just considered. Also the new cognitions must be salient. So it is possible for there to be cognitions without attitude change. If the cognitions are not adopted, i.e. the advocacy statements are not accepted by the message recipient, then attitude change does not occur. This supports our idea of acceptance of the advocacy statement. In consumers who are wary of Internet communications, i.e. they have low trust in the Internet as a medium, new cognitions may not be adopted because their lack of trust acts as a blocking mechanism.

Lutz (1975) pointed out a number of mediating variables to explain how cognitions become attitudes. Among these is the concept of advertising credibility. Advertising credibility represents consumers' perceptions of the truthfulness and believability of advertising in general. Obviously, if this is low, then transferring ad-based cognitions to attitude is very difficult because the consumer automatically discounts any advertising as biased. We believe that the same can be said about Internet communications. Users of the Internet who are predisposed to disbelieve information found on the Internet will more likely disregard Internet ads simply because of the lack of "Internet credibility." That is, consumers who are less trusting of the Internet as a source of information, i.e. those who have perceptions of low Internet credibility, will be less likely to transfer ad and brand cognition into ad and brand attitudes.

To sum up, previous findings in the literature make three points: (1) Source derogation weakens the effect of cognitions on attitude; (2) Cognitive structure change is required for central route attitude change; and (3) Advertising credibility is an important prerequisite for attitude change. We believe that high levels of trust in the Internet will foster less source derogation, enhanced propensity to change

cognitive structure, and provides advertising credibility. Based on the above discussion, we suggest the following hypotheses:

H2a: When trust in the Internet is high, there is a stronger effect of C_{ad} on A_{ad} .

H2b: When trust in the Internet is high, there is a stronger effect of C_b on A_b .

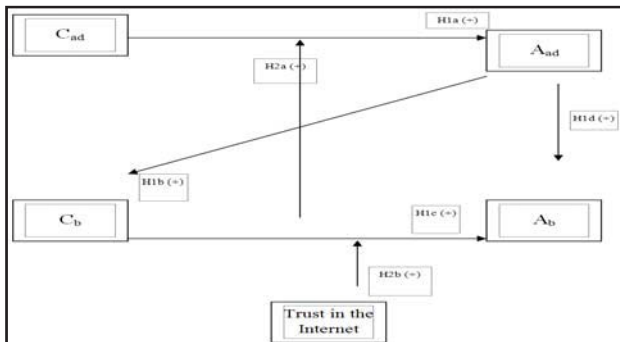


Fig. 2. Conceptual model. The moderating effect of trust in the Internet on cognition and attitude

2. Methodology and data collection

Following past research on ad and brand attitudes, we measure cognitions about the ad and brand (C_{ad} and C_b), attitudes toward the ad and brand (A_{ad} and A_b), and trust in the Internet (T). Primary analyses consist of linear regressions to test the hypothesized relationships. The ad stimuli used were four versions of a standard banner advertisement for two fictitious brands. In order to retain some sense of realism, we utilized many different types of banner ads. We selected two different products, computers and toothpaste the consumption of which represents different levels of product involvement. To ensure that different persuasion methods were represented, we varied peripheral cue strength by using the banner ads that were either animated and color or static and black-and-white. We also varied message argument strength, by using ads that contained either strong or weak message arguments. All ads were shown in the context of a fictitious, general interest website. While the website existed within a closed system, i.e. it did not link to outside websites so that subjects cannot leave the task, the website and ads were created to simulate as closely as possible an actual live website.

Both student and non student respondents were recruited in such a manner as to assure that no more than a third of respondents were students. Once recruited, respondents were guided to the study website and presented with an introductory screen thanking them for participating and providing instructions on how to proceed. Once they had read the instructions, they proceeded to view a series of three web pages from a mock general-interest web-

site. At the top of the first and third pages the stimulus ad was presented. On the second page of the site, a filler ad was shown at the top of the page. Other ads were shown on the site as well including mid text and page bottom banners, as well as button ads in the right hand frame. These were included to generate a more realistic website. After viewing the third page, they were taken to a series of pages that contained the questionnaire items that we discuss next, measuring cognitions first, then attitudes, and finally trust. Sample characteristics can be seen in Table 3.

Table 3. Sample characteristics

Panel A. Gender		
	Frequency	Percent
Male	317	41.3
Female	441	57.5
Missing	9	1.2
Total	767	100.0
Panel B. Age		
	Frequency	Percent
Under 12	2	.3
12-17	16	2.1
18-25	284	37.0
26-35	254	33.1
36-45	85	11.1
46-55	79	10.3
Over 55	41	5.3
Missing	6	.8
Total	767	100.0
Panel C. Income		
	Frequency	Percent
\$0-10,000	134	17.5
\$10,001-20,000	84	11.0
\$20,001-35,000	163	21.3
\$50,001-75,000	98	12.8
More than \$75,000	95	12.4
Missing	35	4.6
Total	767	100.0
Panel D. Race		
	Frequency	Percent
Prefer not to say	33	4.3
Caucasian	413	53.8
African-American	173	22.6
Hispanic/Latino	22	2.9
Asian	59	7.7
Native American	6	.8
Other	49	6.4
Missing	12	1.6
Total	767	100.0

3. Attitude toward the brand

The main dependent variable in this study is attitude toward the brand (A_b). There is quite a bit of overlap between many of the past measures of A_b as many used the same or very similar items (e.g. Coulter

and Punj, 1999; Lord, Lee and Sauer, 1995; Homer, 1990; Miniard, Bhatla and Rose, 1990; Dröge, 1990; MacKenzie, Lutz and Belch, 1986). The most common way to measure attitude is through the use of semantic differential items, where the respondent presents a set of bipolar adjectives with which to rate the brand. Since this construct has been exhaustively measured in a variety of studies, we did not feel that it was necessary to replicate the scale development aspects of the study. Rather we chose to utilize the most successful components from the prior studies to ensure reliable and valid measurement of A_b . In order to develop our scale, we selected a set of four items (attractive, boring, good, like) that appeared most often in these prior studies, and measured them using five-point Likert scales.

4. Attitude toward the ad (A_{ad})

The measurement of A_{ad} has largely been the same as the measurement of A_b , using a number of semantic differential scales or likert scale items (e.g. Mitchell and Olson, 1981; MacKenzie, Lutz and Belch, 1986; Coulter and Punj, 1999). As we have suggested, attitudes, whether they utilize the ad or the brand as their source, can and should be measured the same way; as they are reflections of an underlying opinion about the ad or brand. That is, attitude measurement, regardless of the object of the attitude, should be measured identically across all objects. Given this, we measured A_{ad} using the same items that we use to A_b changing only the object specified from “brand” to “banner ad”. Cognitions about the ad (C_{ad}) and Brand (C_b)

Both C_{ad} and C_b have been captured using similar methods in the past (Wright, 1973; MacKenzie, Lutz and Belch, 1986; Dröge, 1989; Homer, 1990; Miniard, Bhatla and Rose, 1990; MacKenzie and Spreng, 1992). We follow the past researchers’ methods by using the technique called “cognition listing”. For this task, after exposure to an ad, respondents were asked to write down any thoughts that they had about the ad or brand while viewing the ad. Then the thoughts were classified into groups based on their content to ascertain their relevance to the ad or the brand, and whether they were positive, negative or neutral in nature. While it is desirable to use multiple judges to then evaluate the cognition listing data, in this case only the author was employed to evaluate these data. Once the cognition responses were coded, we employ Lutz’s (1975) method to construct a cognitive response index. In our case, this simply means that we created a cognitive response score by subtracting the number of negative cognitions from the number of positive cognitions about both the ad

and the brand. This idea is based upon a compensatory model of consumer choice which is consistent with the Fishbein (1967) multiattribute attitude model, a widely used approach for measuring cognitive structures. This cognitive response score represents a level of positive thought about the ad and brand. This means that any neutral thoughts about the ad are eliminated from analysis, and any negative thoughts about the ad or brand counter the effect of any positive thoughts they had about the ad or brand. While it may be useful to know the pure magnitude of thought that occurred, it is the nature of thought that drives attitude; therefore, we believe the cognitive response index to be the ideal measure.

5. Trust in the Internet

Trust in the Internet, for our purposes, means that users tend to be accepting of advocacy statements seen on the Internet. That is to say that they believe both that the Internet is a source of reliable, accurate information and that it is unbiased. Also, they should feel that sources on the Internet in general are knowledgeable about the topics on which they report. Users high in trust in the Internet will tend to believe what they read, hear or see on the Internet. Given these conditions of Internet trust, we developed a five item scale of trust in the Internet to be used for this study. The items were selected from previously used scales of trust in the Internet shopping (Lee and Turban, 2001), trust in media (Stamm and Dube, 1994), and credibility perception (Sundar, 1999).

6. Method of analysis

In order to test the hypotheses, we will utilize regression analysis. This will involve several regression models in order to capture the entire conceptual model.

$$A_b = \beta_0 + \beta_{1d}(A_{ad}) + \beta_{1c}(C_b) + \beta_{2b}[T(C_b)] + \varepsilon, \quad (1)$$

$$A_{ad} = \beta_0 + \beta_{1a}(C_{ad}) + \beta_{2a}[T(C_{ad})] + \varepsilon, \quad (2)$$

$$C_b = \beta_0 + \beta_{1b}(C_{ad}) + \varepsilon, \quad (3)$$

where: ε is the error term; C_{ad} are the Cognitions about the ad; C_b are the cognitions about the brand; A_{ad} is the attitude toward the ad; A_b is the attitude toward the brand; T is the trust in the Internet.

For each hypothesis, there is a corresponding regression coefficient that must be significant in order to support the hypothesis. For the regression equations, each regression coefficient ($\beta_{x(x=1... 2b)}$) subscript refers to the hypotheses that is tested by that particular coefficient. That is, H_1 is tested using coefficient β_1 , H_{2a} is tested using coefficient β_{2a} , and so forth.

While the regressions illustrated above are conceptually accurate, the specific testing cannot be performed precisely as shown. Since we are testing both main effects and interaction effects, each regression equation listed will actually consist of two individual regressions: one to test the main effects and one to test the interactions. This method is supported by Malhotra (1993, p. 532) who states that when interaction terms are present and significant, no reasonable interpretation can be made about the main effects. However, since our main effects are of as much interest as the interactions, they will be tested independently.

7. Results

To report the results of this study, this section will be organized in the following manner. First, we will present the reliability and validity testing performed. Next, we will present the specific hypothesis testing performed. Then, we will present a summary of findings including a list of hypotheses as well as which hypotheses were supported and which were not. Finally, we will discuss some of the theoretical and managerial implications of the results that we found.

7.1. Reliability and validity testing. Since we are using primarily previously validated scales, we expected all scales to behave reliably. Figure 3 shows the reliability of each measured scale and the number of items. The only changes that were made to the scales were that all negatively worded items were removed. Not surprisingly, the negatively worded items lowered the reliability statistics; however removing them brought all reliabilities with acceptable ranges from 0.85 to 0.90.

Table 4. Reliability analysis

Rotated component matrix		
	Component	
	1	2
ADATT1	0.894	
ADATT2	0.869	
ADATT4	0.829	
BRATT1	0.460	0.737
BRATT2		0.873
BRATT4		0.849

Using SPSS 11.0, a confirmatory factor analysis was run to assess the discriminant validity between the two attitude scales: A_b , and A_{ad} . In this case, all scales were identical attitude scales, with only the object of the attitude changed. Therefore, it is imperative to ensure that we were still measuring distinct constructs, as opposed to an overall general affective reaction to some stimulus during the exposure. Table 4 shows the rotated component matrix for this CFA. While there is a slight cross

loading involving the first item of the brand attitude scale, it is relatively low in magnitude (0.43), while the remaining loadings are as expected. This suggests that, as hoped, both scales are operating independently, providing us with the ability to use them as independent constructs for hypothesis testing.

Table 5. Confirmatory factor analysis for attitude measures

Rotated component matrix		
	Component	
	1	2
ADATT1	0.894	
ADATT2	0.869	
ADATT4	0.829	
BRATT1	0.460	0.737
BRATT2		0.873
BRATT4		0.849

Note: Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization. *values < |0.4| deleted for clarity.

Because of the strong reliability of the multi-item scales, and their apparent discriminant validity, all multi-item scales were combined by averaging the responses so that one mean level score for each variable could be used for hypothesis testing.

7.2. Hypothesis testing. In this section we discuss the hypothesis testing performed in order to support our conceptual model presented in the proposed conceptual model (Figure 2). As stated previously, all hypotheses were tested through linear regression analysis. Since all scales were found reliable and valid, the variables used to test the regressions were the mean values of all items within the given scale. To test the model, we first tested all main effects, followed by all interaction effects to test all moderating hypotheses. The results is shown in Table 6.

Table 6. Regression results

Hypothesis	Dependent variable	Moderator	Independent variable	Regression coefficient	Sig. level
<i>H1a</i>	A_{ad}		C_{ad}	0.211	0.000
H1b	C_b		A_{ad}	0.009	0.829
<i>H1c</i>	A_b		C_b	0.164	0.000
<i>H1d</i>	A_b		A_{ad}	0.618	0.000
<i>H2a</i>	A_{ad}	T	C_{ad}	0.216	0.000
<i>H2b</i>	A_b	T	C_b	0.165	0.000

Note: Supported hypotheses are shown in italics. A_b = Attitude toward the brand; A_{ad} = Attitude toward the ad; C_{ad} = Cognitions about the ad; C_b = Cognitions about the brand; T = Trust in the Internet.

H_{1ad} represents our modeling of the dual mediation hypothesis. These hypotheses replicate the work done by MacKenzie, Lutz and Belch (1986) and Homer (1990), and therefore follow the same patterns as they used. Testing this set of hypotheses

required a total of three regression equations. H_{1a} states that as C_{ad} become more positive, A_{ad} increases. In equation (2), β_{1a} was found to be 0.211 ($p < 0.001$), which is sufficient to support the hypothesis. H_{1b} states that as A_{ad} increases, there will be more positive C_b . The test of this hypothesis shows, however, coefficient β_{1b} was only 0.009 ($p = 0.829$), and therefore, the hypotheses was not supported by regression analysis. H_{1c} states that as cognitions about the brand (C_b) become more positive, A_b also becomes more positive. The coefficient β_{1c} was found to be 0.164 ($p < 0.001$), therefore, our analysis supported this hypothesis. Finally, H_{1d} suggests a main effect where A_{ad} directly influences A_b . This is tested in equation 1, and we found that β_{1d} was 0.618 ($p < 0.001$) again supporting the hypothesis. Because all of these hypotheses were supported except for the mediating effect of A_{ad} , we are refuting the dual mediation hypothesis of attitude change in favor of the affect transfer hypothesis as presented before.

$H_{2a,b}$ are interaction hypotheses suggesting a blocking mechanism between cognitions and attitudes formed by trust in the Internet. That is, when trust in the Internet is low, the relationship between cognitions and attitudes is weakened, or conversely, when trust in the Internet is high, then the formation of attitudes from cognitions should be strengthened. Since $\beta_{2a} = 0.216$ ($p < 0.001$) and $\beta_{2b} = 0.165$ ($p < 0.001$), both of these moderating hypotheses are supported by regression analysis of the interaction terms, supporting the impact that we suggested.

Discussions

Our results provide both theoretical and managerial implications. The only hypothesis not supported is the mediating effect of brand cognitions on brand attitude. This was suggested under the theory of the dual-mediation hypothesis. From our literature review, we did see four alternative specifications of the relationships between cognitions and attitudes, and we selected the one that appeared to be the most accurate. However, our data does not support this theory. Further analysis also indicated a direct relation between A_{ad} and purchase intent (I_b) as well as between A_b and I_b . Even though we did not originally hypothesize these relationships, they appear to me meaningful. Since we are not performing causal analysis, it is not at this time possible to determine with any certainty if the relationship between A_{ad} and A_b is one-way or two-way. Therefore, our data suggests alternative model specification for the mediating role of A_{ad} . With further testing, this model could just as easily be merely affect

transfer with independent influences, however further testing should reveal whether or not this is the case.

Finally, while trust in the Internet has been studied a lot in the past, it appears to be an important barrier to attitude formation. We hypothesized that Internet trust acts as a blocking variable from cognitions to attitudes primarily due to source derogation and advertising credibility. It indeed appears that this is the case, as our hypotheses were supported. When trust in the Internet was low, ad and brand cognitions were less likely to affect ad and brand attitudes. However, when Internet trust was high, ad and brand cognitions had the expected effects on ad and brand attitudes. This suggests that Internet trust is an important consideration for any future studies on the impact of online advertising on attitude formation. Trust in the Internet appears to play a role in the formation of attitudes during ad exposure. In this case, it can be stated that higher levels of Internet trust are always better, as low levels of trust tend to weaken attitude formation, even though cognitions may have been successfully engendered. Again, attitudes will less likely be formed because of the low trust in the Internet. These findings suggest that brand managers can use targeting information to alter marketing strategies for attitude formation. Target markets that are known to have high levels of Internet trust can be targeted through traditional means, utilizing the hierarchy of effects model changing attitudes by generating cognitions. On the other hand, targets that do not trust the Internet as a source of information should be targeted through more direct means, attempting to change attitudes without the use of cognitions, i.e. through direct affective appeals.

Limitations

In this implementation of the study, there are some limitations that could not be avoided; however future studies may well be able to address the issues. First, the repetition effect is not being captured. There is reason to believe that repetition of exposure will impact information processing and attitude change effected by banner ads. In our study, we present each banner ad twice, and always at the same placement within the website. There is little doubt that more or less repetition of the stimulus ad would create differential effect on attitude change. This is an effect which would be useful to study, however we believe it to be beyond the scope of the current study.

Second, like the effect of ad repetition, the clutter effect has not being captured here. This clutter effect has become ever more important as online ads become more and more pervasive. However, this clutter effect would be very difficult to measure and implement in this study. In our study, we attempt to recreate a typical general interest website, with approximately six ads per page. This was held constant across all condi-

tions. However, many websites have far fewer or, more often, far more than six ads per page. Manipulating the amount of clutter may prove useful in future studies. Additionally, ad size was not changed in our study. The ad size used was the IAB banner ad size standard of 468 x 60 pixels. Other ads were presented that were of different sizes; however, we did not use these ads in the study. Future studies may be able to identify changes in attitude change behavior based on different ad sizes.

Third, it is possible that ad placement could play a part in attitude change models of advertising. In our study, there is a weak content relevance of the ads, as the banner ads are appearing in the context of a general interest website. It is possible that in cases where there is a lack of “fit” between the banner ads and the content of the website on which it appears that attitude change effected by the ads may differ substantially. Manipulation of this “contextual fit” variable would require exposure of ads within different website contexts. This of course will require additional experimental manipulations and are beyond the scope of this study.

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Conclusions

As Internet companies rely increasingly on advertising revenue as a primary business model, it is becoming more important to understand the how advertisements are viewed, processed, and used by the consumer for decision making. Based on this study, it is clear that a consumer’s level of comfort with Internet-based sources is an important influence on attitude formation process. If consumers who are skeptical of Internet sources are being targeted by an advertiser, they may not be able to rely on traditional cognitive transfer mechanisms, as the affect transfer from source to ad is impeding the cognitive transfer. This suggests that peripheral cues rather than cognitive message arguments may be more effective. Conversely, if an advertiser is targeting an audience with high levels of trust in Internet sources, cognitive messages will operate in the traditional fashion, driven more directly by product and situational involvement.

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