

MEDIA- AND VEHICLE-SOURCE EFFECTS IN INTERNET COMMUNICATIONS

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The choice of communications media and specific vehicles within the medium can make substantial positive or negative contributions to the effectiveness of persuasive messages. This study examined the impact of both media- and vehicle-source effects on subjects' overall evaluation of a persuasive message, as well as their acceptance of specific arguments. Findings demonstrate that both the message-vehicle and medium have significant effects on subjects' responses to persuasive messages. Audience involvement did not mediate the impact of either the message vehicle or the medium of transmission on persuasion. Further, significant interactions between these two source characteristics were observed.

INTRODUCTION

Media- and vehicle-source effects represent two of the most enigmatic phenomena in the advertising and persuasive communications literature. In previous research, channel source effects of this type have been operationally defined as the differential effect that a message exposure will have on an audience exposed to one vehicle as compared to an identical group exposed to another (Aaker and Brown 1972). Although there exist few published empirical studies that have investigated the nature of media- and vehicle-source effects, there is widespread consensus among advertising professionals that these effects do exist and that they are important considerations in the media and the media-vehicle selection process. To date there has been little beyond conventional wisdom to guide planners on this subject, despite the fact that parameters relevant to the issue of media- and vehicle-source effects appear in nearly all media planning and selection models.

In practice, most approaches to evaluating the appropriateness of a given advertising medium or vehicle assess audience rather than transmission channel characteristics in an effort to efficiently

reach the target market. As a consequence, these methods do not address the issues of medium- or vehicle-source effects. Alternative message vehicles with comparable readership profiles may differ significantly in their potential to otherwise contribute to the persuasive impact of the message. Media selection procedures based exclusively on demographics or "single-source" data fail to take into account this potential for positive or negative "rub-off" effects arising from the inherent characteristics or attributes of advertising media and vehicles.

Despite consensus among communication experts that media- and vehicle-source effects can make substantial contributions to the persuasive impact of promotional messages, the means of assessing the contextual compatibility of a medium and vehicle for a given message remain relatively subjective. Among the measures which have been suggested as indices to be used in the selection of appropriate advertising vehicles are the target concentration index and the number of compatible pages (Aaker, Batra and Myers 1992). The operative assumption underlying these approaches to identifying appropriate vehicles is that if the editorial content is involving, the advertisement will be read with more intensity. This assumption has not, however, been supported by the cited research on context effects in advertising (Norris and Colman 1992).

Vehicle-Source Effects

There exists a substantial body of literature on various dimensions of message-source effects in persuasive communications. Reviews of this literature have generally classified source characteristics into three groups. "Message sources have typically been presented as communicators who are credible versus not-credible; physically attractive versus unattractive; or ideologically similar versus dissimilar" (Wilson and Sherrell 1993). With very few exceptions, the sources used in studies of message-source credibility have been personal sources. Vehicle-source effects have been regarded in the scarce literature on this subject as a special class of "simple" source effects.

"Source effects have been extensively studied in communication research. Among the source dimensions that have been explored are expertness, attractiveness, trustworthiness, power, familiarity and prestige. Although the message environment is a form of source less frequently studied, it is reasonable to assume that some of these same source effect dimensions are relevant" (Aaker and Brown 1972, p.11).

The belief that communication vehicles (e.g., magazines, etc.) may be capable of producing effects like those of other sources is founded in one of the earliest published studies on the persuasive impact of source credibility. Hovland and Weiss (1951) experimentally operationalized the high and low credibility conditions in this study by identifying the source of position papers on four different topics as either individual authors or periodical publications.

The principal finding of this study, that credibility enhanced positive attitude change, was obtained whether individual writers were evaluated against periodical publications, or periodical publications were evaluated against each other. Although the phenomenon identified in this study pertained to the editorial content of periodicals, it did provide the impetus for a limited quantity of subsequent research on vehicle-source effects within an advertising context.

The few published studies on vehicle-source effects within the advertising research literature have

examined a relatively small number of mediating constructs. Fuchs (1964) reported an experiment in which two source factors were manipulated in a between subjects design: the prestige of the company sponsoring the ad and the magazine's perceived prestige. Fuchs' analysis of the difference between pre- and post-exposure ratings revealed significant main effects for both magazine and sponsors' prestige in subjects' responses to the advertised products.

The most systematic effort to assess the interaction of vehicle characteristics with ad and reader factors was undertaken by Aaker and Brown (1972). The authors of this study executed a 2 X 2 X 2 factorial design, manipulating vehicle character (prestige v. expert magazines), message copy style (image v. reason-why ads), and controlling for the audience's prior experience with the advertised product (users v. nonusers). Aaker and Brown found that prestige magazines changed nonusers' attitudes significantly more than expert magazines for ads stressing product image. Conversely, expert magazines changed nonusers' attitudes significantly more than prestige magazines for reason why ads. The effects observed for product users were typically in the same direction as those noted above, but were of lesser magnitude and statistically nonsignificant. The strength of the observed interactions for product nonusers, relative to users of the advertised products, suggests that persons unfamiliar with a product may be more impressionable than users. This may be indicative of nonusers reliance on attendant cues, such as vehicle-source attributes, in evaluating unfamiliar products.

Aaker and Brown (1972) represents the most ambitious and systematic effort to improve our understanding of this phenomenon. Their research provides valuable insights on the nature of vehicle-source effects and provides a highly relevant point of departure for the research presented here. The variables used in their study provide interesting suggestions regarding the operative causal factors underlying the phenomenon. Most notable in this regard is the finding that the interactions of vehicle character with message copy style for both the expert and prestige magazines were statistically significant for product nonusers only. This

observation suggests that personal involvement may have mediated these effects. That is, nonusers of the products may have found the advertisements to be less personally relevant or involving than did product users. Consequently, the persuasive impact of magazine prestige and expertise may have been greater for the nonusers because they were less motivated to process the contents of the ads and more reliant on peripheral cues in evaluating the products.

Media-Source Effects

Although media-source effects for traditional media have been extensively researched, there is little experimental evidence on the impact of the Internet in this regard. Most models of communication describe the medium as a transmission channel or device through which messages are transmitted from senders to receivers (Sundar 1998). McLuhan claimed that the psychosocial effects of media on audiences outweighed the effects of message content. He purported that media technologies send their own messages that are much more powerful than the effects of content. According to McLuhan, "The effects of technology do not occur at the level of opinions or concept, but alter sense ratios or patterns of perception steadily and without any resistance" (McLuhan 1964).

Currently, there is a very limited body of research dealing with the media-source effects of the Internet. Much research has been done into the demographics of Internet users (Johnson and Kaye 1998), but there has been little investigation of the effects that this medium has on the user's perception of the material. This may be due to the fact that the Internet is a relatively new medium and that the Internet environment is constantly changing. Research into the potential source effects of this medium are important in developing an understanding of this medium and its effective uses in persuasive communications.

Johnson and Kaye (1998) examined the effect of medium on credibility in print and online sources. They also examined the degree to which an individual's level of usage impacted his or her perception of credibility and the degree to which perception of the credibility of online sources

correlated with age, gender, income and educational levels. Their survey of politically interested web-users asked respondents to compare print and online media in terms of believability, fairness, accuracy, and depth of political information. Specific media classes examined were newspapers, news magazines, candidate literature, and political issue-oriented sources. Respondents were asked to rank these attributes on a five-point scale. Johnson and Kaye found that online newspapers and online candidate literature were judged as significantly less credible than their traditional counterparts. However, no statistically significant difference was found between credibility scores for online news magazines and online issue-oriented sources and their traditional counterparts.

The effect that print versus online media has on subject recall and recognition of advertising and news story content has been investigated (Sundar 1998). A between-subjects design was used in which subjects were exposed to the front page of a fictitious newspaper featuring two news stories and an advertisement. One half of the sample read the page in print form while the other half read the story in an online form. A questionnaire with recall and recognition measures was then administered. Subjects exposed to the communications via the print medium demonstrated significantly higher recall scores for the persuasive messages. No measures related to persuasive effects were included in the study.

EXPERIMENTAL HYPOTHESES

The intent of the research reported here is to investigate generalizable and systematic dimensions related to medium- and vehicle-source effects in print communications. The interaction of audience involvement with traditional forms of source credibility has been the focus of a substantial body of research in the persuasive communications literature. Thus, the results from this study will be readily comparable to the patterns of past findings, permitting a test of the operative assumption that medium-source and vehicle-source effects behave much like other "simple" source effects. Specific hypotheses stemming from this premise are provided below.

Main Effects:

- H₁:** The use of a high credibility medium will result in greater positive attitude change toward the position advocated in a persuasive message across all subjects and treatment conditions.
- H₂:** The use of a high credibility vehicle will result in greater positive attitude change toward the position advocated in a persuasive message across all subjects and treatment conditions.

Interactions with Involvement:

- H₃:** It is expected that the persuasive effects of media-source credibility will be greater under low involvement than under high involvement.
- H₄:** It is expected that the persuasive effects of vehicle-source credibility will be greater under low involvement than under high involvement.

The specific source characteristic chosen for this study, source credibility, is intended to serve two functions within the research context. First, the reported main effects of source credibility and its interaction with involvement are quite consistent throughout the literature (see Wilson and Sherrell 1993). As a consequence, it is intended that the analysis of results from these manipulations should serve as a standard against which the compatibility of this study with previous research can be assessed. In short, these manipulations are intended to provide an assessment of the character of vehicle-source effects within an established research paradigm.

The second function of these manipulations is central to the primary purpose of this research. The nature of media- and vehicle-source effects needs to be appreciated within a broader context, rather than in isolation. The potential in this design for both media- and vehicle-source effects will permit direct comparisons of the main effects and interaction of these factors with respect to both magnitude and direction. Prior research has failed to examine dual or parallel source effects of this type in the context of persuasive communications.

Experimental investigations have consistently demonstrated that the persuasive impact of source credibility is greater under low involvement than under high involvement treatment conditions (see: Wilson and Sherrell 1993; Petty and Cacioppo 1981). In the absence of previous research on the interaction of media- and vehicle-source attributes with involvement, this relationship has been extended to provide the basis for hypotheses H3 and H4. These "baseline" hypotheses are, of course, consistent with the view that media- and vehicle-source effects in persuasive communications are comparable to other "simple" source effects.

METHOD

Pretest Results

Media-Source Credibility. In the absence of a solid foundation of prior research on the relative credibility of the Internet versus other media, a brief pretest was conducted prior to the final study to validate the media-source credibility manipulation. One hundred and twenty-one subjects were recruited from undergraduate business classes to respond to a short questionnaire. Subjects were asked to rank five classes of media with respect to their reliability as a source of news and information: magazines, newspapers, television, radio, and the Internet. Each media class was evaluated, using seven-point scales, along three dimensions: believability of information, trustworthiness, and expertise. Although the task required subjects to generalize across a wide range of highly variable experiences with each of the media, their evaluations remained internally consistent. Newspapers and magazines were regarded as the most credible sources by a substantial margin. The Internet and radio were regarded as the least credible.

Vehicle-Source Credibility. A second pretest was used to select the specific vehicles to be used in the study. Ninety-four subjects were recruited from undergraduate business classes. Subjects were given a questionnaire that gauged their familiarity with and perceptions of a number of magazines from which the two vehicles for the final study would be chosen. Three criteria were applied to the selection of appropriate high and low credibility magazines.

First, the magazines chosen for use were to be maximally different from each other, representing polar extremes of the credibility construct. In addition, subjects were to be relatively familiar with the magazines chosen for the study, hence fairly certain of their beliefs, so as to enhance the impact of the vehicle manipulation. Third, each publication was to exhibit minimum between-subjects variability with respect to the dimensions of source credibility.

Eleven popular magazines were evaluated on six dimensions: familiarity, believability, trustworthiness, expertise, likability, and the certainty or strength of subjects' own opinions with respect to their evaluations. Based on subjects' responses, a low credibility vehicle (LCV) and a high credibility vehicle (HCV) were selected for use in the final study. The LCV was ranked as the least believable, trustworthy and expert of the eleven publications tested. The HCV was evaluated significantly higher than the LCV on each of these dimensions. This pretest does not preclude the possibility that subjects' overall evaluations of these two vehicles reflect their perceptions of attributes other than credibility. It is a constraint imposed by reality that the differences between alternative advertising vehicles that contribute to the vehicle-source phenomenon can never be attributed to any single source dimension with absolute certainty. The qualitative value of each vehicle is a product of a composite of many characteristics.

FINAL STUDY: PROCEDURE

Two hundred and ninety-nine undergraduate university students participated in the final study. Subjects received course credits in exchange for their participation. All students were undergraduate business majors attending a midwestern college. Subjects were randomly assigned to conditions in this 2 X 2 X 2 (High vs. Low Media-Source Credibility X High vs. Low Vehicle-Source Credibility X High vs. Low Involvement) between-subjects design.

After receiving their initial verbal instructions from the experimenter, subjects participating in the study received a packet of materials. The first page introduced the sponsor and general purpose of the research project. Subjects were informed that

researchers at a local college were interested in student opinions on sleep habits and personal health. They were told that they would be asked to complete a brief questionnaire after reading an article on sleep reduction. One half of the subjects read the materials that had been specially prepared to resemble "re-prints" from a magazine in a print format. The other half read the article over the Internet from the magazines' corresponding online editions.

Print Condition Manipulation. The five pages following the introduction contained the magazine cover page, the index for that issue of the magazine (partially obscured by a copyright notice), the article, and the two advertisements accompanying the text. The use of the magazine cover page and index identification served as the operationalization of the vehicle-source variable. The copyright notice was positioned on the index page so as to obscure the title of the article that actually appeared in the cited pages of the magazine in that issue.

The article on sleep reduction was professionally typeset and formatted to simulate the appearance of the HCV and LCV magazines. These vehicles were selected in pretesting to serve as the high and low credibility vehicles respectively. Pretest results also demonstrated that these magazines were relatively familiar to this population and each exhibited low between-subjects variability with respect to source credibility measures.

After completing the article, each subject received the booklet containing the dependent measures. The order of presentation for each complete set of dependent measures was counter-balanced. After subjects had read the article and completed the dependent measures, they were debriefed, thanked for their participation and dismissed.

Internet Condition Manipulation. The general appearance of the HCV and LCVs' online editions were copied by using a software package to "lift" the frames and HTML coding from the actual sites. The article on sleep reduction was inserted in place of an existing feature story. Subjects were given a questionnaire in class that identified the URL (uniform resource locator) for the Internet site

where the article on sleep reduction was located. The instructions required that they read article and leave the site prior to completing the questionnaire. The order of presentation for each complete set of dependent measures was counter-balanced. After all of the subjects in the online media treatment conditions had completed their assignment and returned the questionnaire to the instructor, they were debriefed and thanked for their participation.

FINAL STUDY: DEPENDENT VARIABLES

Recall Measure. Prior to any of the attitude measures, subjects were required to complete an unaided recall task. They were presented with ten empty spaces and asked to list as many of the specific recommendations from the article as they could remember. Subjects' performance on this recall task was used to assess their level of involvement with the content of the article on sleep reduction.

Following the completion of the recall task, subjects were required to complete three types of attitude measures in response to the magazine article: General Affective Response, General Message-Acceptance, and Specific Message-Acceptance measures.

General Affective Response Measures. A five-item semantic differential scale was used to assess subjects' overall reaction to the article on an affective dimension. A seven-point response scale was provided for adjective pairs including *favorable-unfavorable*, *positive-negative*, and *valuable-worthless*.

General Message-Acceptance Measures. The second set of dependent measures consisted of a series of four ratings on bipolar adjective scales. These items addressed general issues that pertain to the persuasive impact of the article. The four measures used are presented below.

I believe the information presented in the article.

- The article was very persuasive.
- This was a very good article.
- I am considering changing my sleeping habits after reading this article.

Subjects responded to each of these four statements on five-point scales with endpoints labeled strongly agree and strongly disagree.

Specific Message-Acceptance Measures. Bipolar adjective measures with endpoints labeled extremely likely and extremely unlikely were used to assess subjects' beliefs about the specific arguments presented in the article. Subjects responded to this scale by indicating the extent to which they believed each statement quoted from the article to be factually correct. Subjects rated seven key arguments taken from the article on these seven-point scales.

RESULTS

The General Message-Acceptance Measures were evaluated by averaging subjects' responses to the four items in the set. The resulting scale produced a Cronbach alpha of .814. The analysis of this scale demonstrated statistically significant main effects for both media- and vehicle-source credibility. Subjects exposed to the article in print found the article more believable ($M = 3.77$) than those exposed to the same message over the Internet ($M = 3.07$, $p < .01$). Subjects exposed to the article in the HCV regarded the article as generally more persuasive ($M = 3.63$) than those exposed to the LCV ($M = 3.15$, $p < .01$).

A statistically significant interaction between media-source and vehicle-source credibility was observed (Figure 1). When exposed to the article via the Internet, there was no significant difference in subjects' general evaluation of the article presented in the HCV ($M = 3.66$) vs. the LCV ($M = 3.44$). When exposed to the information in print, the levels of message acceptance were significantly higher for the HCV ($M = 3.86$) than the LCV ($M = 2.49$, $p < .01$). An alternative expression of this finding is that those subjects exposed to the LCV were much more likely to express a positive evaluation of the article when presented over the Internet ($M = 3.44$) than in print ($M = 2.49$, $p < .01$). No other interactions for these measures were statistically significant.

Figure 1
General Message Acceptance Measures

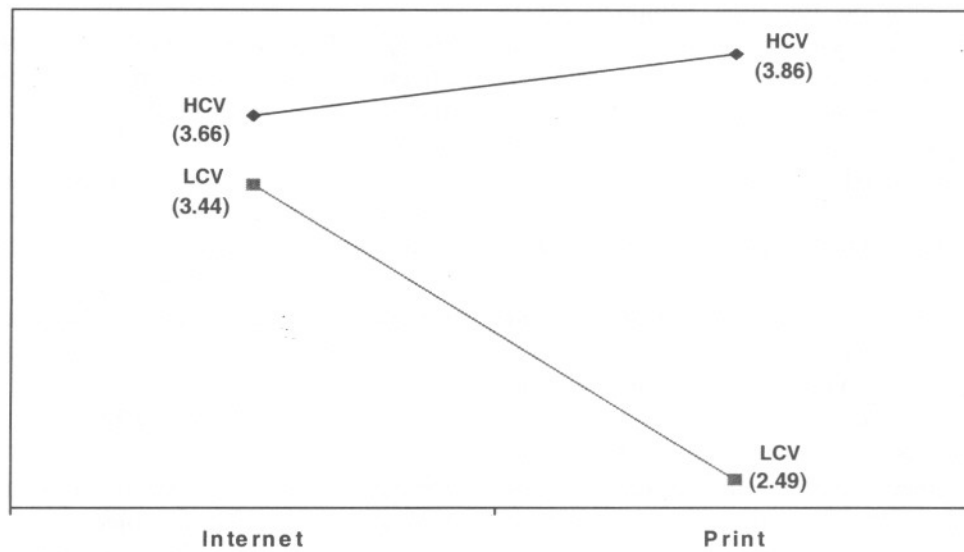
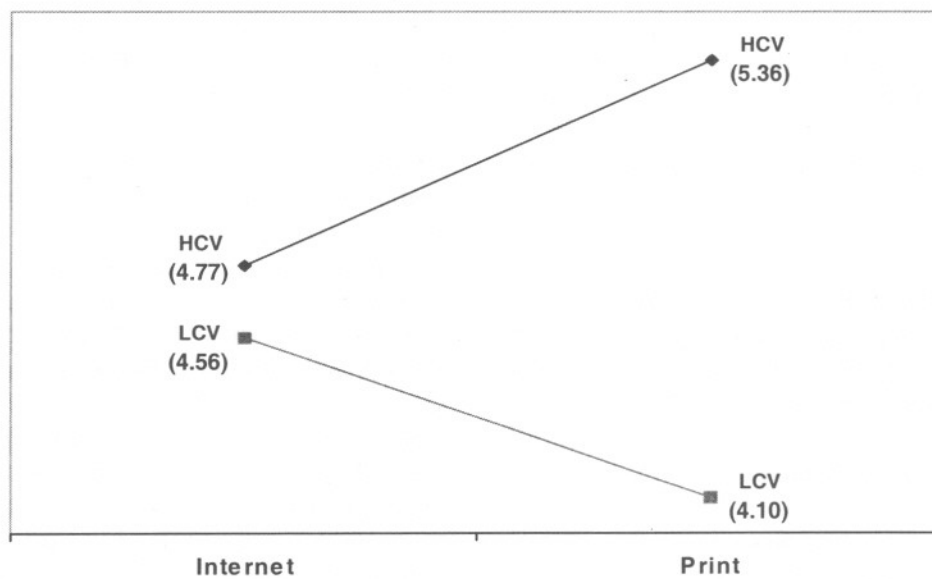


Figure 2
Message Acceptance: Specific Arguments



The Specific Message-Acceptance Measures were evaluated by averaging subjects' responses to the seven items in the set. Preliminary analysis of responses to this scale yielded a Cronbach alpha of .889. The statistical analysis of this scale demonstrated a statistically significant main effect for vehicle-source credibility. Subjects exposed to the high credibility vehicle found the claims made in the article more believable ($M = 5.03$) than those exposed to the low credibility source ($M = 4.27$, $p < .05$).

A statistically significant interaction between media-source and vehicle-source credibility was also observed (Figure 2). When presented in print, subjects were more likely to accept specific arguments from the article attributed to the high credibility vehicle ($M = 5.36$) than the low credibility vehicle ($M = 4.10$, $p < .01$). When presented on the Internet, there was no significant difference in subjects' acceptance of specific claims presented in the HCV ($M = 4.77$) vs. the LCV ($M = 4.56$).

No statistically significant main effects or interactions were observed in subjects' responses to either the Recall or General Affective Response Measures.

SUMMARY AND CONCLUSIONS

Hypothesis 1 postulated that the use of a high credibility communication medium will result in greater positive attitude change toward the position advocated in the article. This hypothesis was supported insofar as print media produced greater general message-acceptance and higher rates of acceptance for specific claims from the article than did the Internet-based versions.

Hypothesis 2 postulated that the use of highly credible communication vehicles will result in greater positive attitude change toward the position advocated in the article. Support for this hypothesis was obtained in subjects' responses to the argument-specific message-acceptance measures as well as the general message-acceptance measures.

Hypothesis 3 and hypothesis 4 state that the effect of media- and vehicle-source credibility on attitude toward the position advocated in the article will be greater under low involvement than under high involvement. Neither hypothesis, based on prevailing views of conventional source effects, was supported by this study. In this context, the persuasive influence of media- and vehicle-source credibility was not mediated by involvement for any measures.

Subjects' responses to both the general and argument-specific message-acceptance measures for the article demonstrated a significant interaction between media- and vehicle-source credibility. The persuasive liability posed by the LCV was substantially mitigated when presented on the Internet. Conversely, the positive impact of the HCV was adversely affected by presentation on the Internet. These results indicate a complex interaction that cannot be explained by attributing superior and subordinate roles to these two kinds of persuasion cues. The relative impact of media- and vehicle-source credibility appear to be partially contingent on each other. Vehicle credibility appears to play a more important role in the acceptance of a persuasive message in print than it does online.

IMPLICATIONS

The results obtained from this study have several implications for advertising practitioners. The significant main effects for media and vehicle credibility on subjects' acceptance of the message underscores the importance of these source effects in the media planning and selection processes. This evidence clearly demonstrates the impact that attributes of the communication channel may have on advertising effectiveness. The mediating effect that the Internet has on vehicle-source credibility is of considerable relevance in the area of persuasive communications. The power of vehicle credibility to influence audience acceptance of a message is substantially reduced when presented in online form.

The results of this study also challenge the validity of the assumption that media- and vehicle-source

effects are comparable to other simple source effects. Contrary to the Elaboration Likelihood Model of attitude change in response to persuasive communications, the impact of media- and vehicle-source credibility on the evaluation of the article was not mediated by involvement. These "persuasion cues" made substantial contributions to the effectiveness of the message used in this research under both high and low involvement conditions. The evidence from this study suggests that the credibility of the channel provides a much broader context or frame of reference within which persuasive messages are evaluated.

The interaction of media- and vehicle- source effects is also of notable importance with respect to the prevailing theories of communication effectiveness. While subjects judged the credibility of the Internet to be lower, acceptance of both general and specific messages was less affected by the vehicle-source when presented online. Prevailing theories suggest that when presented with a low credibility medium, subjects should be more likely to rely on cues such as vehicle-source credibility. In contrast to that view, the results obtained in this study support McLuhan's claim that the psychosocial effects of media technologies can alter patterns of perception without resistance. Given the newness of the Internet medium and the rapid increase in its use as a source of information, this effect has significant implications for the design of effective mass communications.

Future Research

To enhance our understanding of media- and vehicle-source effects, future research should be directed toward tests of alternative explanatory hypotheses. One such hypothesis pertains to the relative weight or importance of these two types of cues in shaping audiences' response to persuasive messages.

The interaction of media- and vehicle- and article-source credibility also suggests a line of investigation that may improve our understanding of channel source effects. The interaction observed in this research may be due exclusively to the convergence of two credibility cues. The study by

Aaker and Brown (1972) suggests that the effect of vehicle characteristics may be dependent on the objectives and style of the advertising copy. Similar results may not be observed if other message factors, such as source attractiveness or the number of arguments cited, were manipulated. This same rationale can be applied to examining a variety of media and vehicle characteristics.

Much remains to be learned about the nature of media- and vehicle-source effects in persuasive communications. Previous research on this topic has provided only a fundamental understanding of the concept. The study presented here serves to further highlight the need for additional research on this complex phenomenon.

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