

Comparative Versus Noncomparative Advertising: A Meta-Analysis

Previous research and reviews on comparative advertising report mixed results. The authors report the results from a meta-analysis that examines the efficacy of comparative advertising. The analysis shows that comparative ads are more effective than noncomparative ads in generating attention, message and brand awareness, levels of message processing, favorable sponsored brand attitudes, and increased purchase intentions and purchase behaviors. However, comparative ads evoke lower source believability and a less favorable attitude toward the ad. Additional analyses of moderator variables find that market position (sponsor, comparison, and relative), enhanced credibility, message content, and type of dependent measure (relative versus nonrelative) affect some of the relationships between advertising format and cognition, brand attitudes, and purchase intentions. New brands comparing themselves to established brands appear to benefit most from comparative advertising.

Comparative advertising has become increasingly prevalent in the United States media. Some examples of the many advertising campaigns using comparative advertising include MCI comparing its long-distance call prices and service to AT&T; VISA comparing the number of merchants accepting its credit card to American Express; Burger King comparing its cooking method to McDonald's; and various beverage producers challenging competitors in taste tests. Recent estimates indicate that comparative advertising formats account for one-third of all advertisements (Neiman 1987; Stewart and Furse 1986) and close to 80% of all television commercials (Pechmann and Stewart 1990b).

Comparative advertising's increased popularity may be partly due to the Federal Trade Commission's informal encouragement of explicit comparisons (Tannenbaum 1974; Wilkie and Farris 1975), as well as to advertisers' beliefs in its effectiveness. The FTC rationalized that explicit comparative advertisements deliver information previously unavailable to consumers (Wilkie and Farris 1975). The FTC's implicit encouragement of brand comparisons, along with relaxed restrictions and competitor and media concerns (Tannenbaum 1974), sparked the research interest of academicians and practitioners alike.

The effectiveness of comparative advertising, according to the large body of extant empirical research, is equivocal. Some investigators conclude that comparative advertising

provides advantages that are not associated with noncomparative advertising (e.g., Dröge and Darmon 1987; Miniard et al. 1993; Pechmann and Ratneshwar 1991; Pechmann and Stewart 1990a; Rose et al. 1993). Others report that comparative advertising produces undesirable outcomes (e.g., Belch 1981; Golden 1979; Goodwin and Etgar 1980; Levine 1976; Swinyard 1981). These conflicting opinions do not seem to deter major consumer goods and service corporations from using comparative advertising in their promotional mix.

The prevalence of comparative ads in the face of the conflicting empirical evidence about their effectiveness suggests that this topic should be important to researchers and practitioners. There have been several attempts to consolidate research findings in this area (e.g., Barry 1993; Etgar and Goodwin 1977; Pechmann and Stewart 1990b; Turgeon and Barnaby 1988). Notwithstanding the importance of these earlier contributions, these qualitative reviews typically include only published research (cf. Turgeon and Barnaby 1988).¹ To date, no one has attempted a quantitative integration (i.e., a meta-analysis) of this research stream. To fill this void, we conduct a systematic review and a quantitative integration of all the available comparative advertising research.

We systematically review the comparative advertising literature with two goals in mind: (1) to consolidate to the extent that is possible the comparative advertising research—published and unpublished—and (2) to discover

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¹We have two concerns about these previous reviews. First, there is the risk of bias from ignoring unpublished research when synthesizing results across studies (Hunter and Schmidt 1990; Rosenthal 1984). Second, all of these articles use the conventional subjective review process. Pechmann and Stewart's (1990b) "qualitative meta-analysis" differs somewhat from the others. They report the amount of evidence available for or against a proposition, based on the number of studies that support or fail to support the proposition.

when comparative formats are more effective than noncomparative formats. Constructing a general theory of comparative advertising is beyond the scope of our research effort. We organize the review and meta-analytical tests of hypotheses around Lavidge and Steiner's (1961) advertising functions model. Further details pertaining to the conceptual underpinnings of the hypotheses tested in our study can be found in the original articles.

In Figure 1, we depict our Hierarchy of Comparative Advertising Effects Model, which is based on Lavidge and Steiner's (1961) model. This hierarchical model is used to classify the literature's many dependent variables into meaningful effect categories. Using these categories we systematically compare the effectiveness of comparative advertising with noncomparative advertising. Where possible, we test Wilkie and Farris's (1975) propositions for comparison advertising effects.

First, we define comparative advertising and explain our guiding framework. Second, we describe our literature-compilation procedures and meta-analysis methods. Third, we discuss our findings and their implications for advertising practice.

A Conceptual Framework and the Research Hypotheses

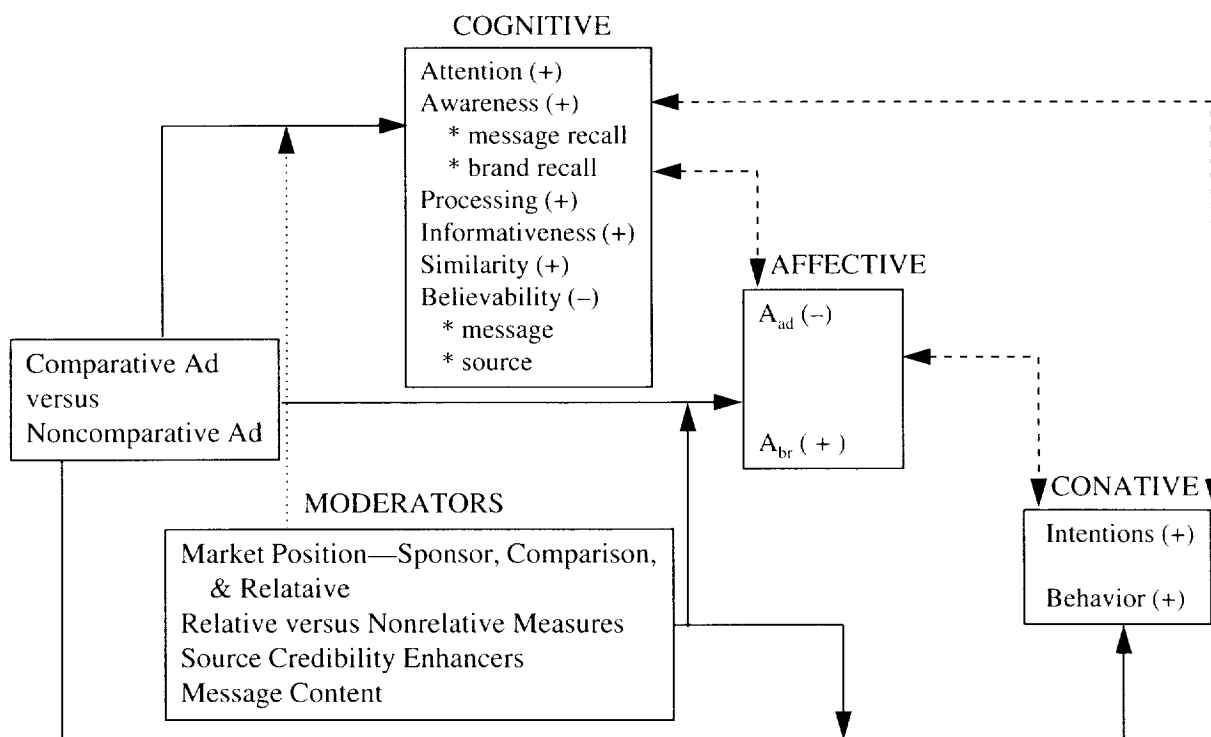
Previous research defines comparative ads (also known as comparison ads) using two criteria. First, comparative ads explicitly (e.g., Wilkie and Farris 1975) or implicitly (e.g.,

Jackson, Brown, and Harmon 1979) compare at least two brands in the same generic product or service class. Second, comparative ads compare the brands on specific product/service attributes (Wilkie and Farris 1975) or market positions (McDougall 1976). Thus, brands claiming to be better than their competitors without saying how are not using a comparative format. Many scholars have compared the effectiveness of comparative ads to that of noncomparative ad formats. These studies typically examine effectiveness according to one or more of the advertising functions in Lavidge and Steiner's (1961) model.

Lavidge and Steiner (1961) separate the objectives of advertising into three main functions: cognitive, affective, and conative. Advertising's cognitive function provides information and facts for the purpose of making consumers aware and knowledgeable about the sponsored brand. Advertising's affective function creates liking and preference for the sponsored brand—preference presumably refers to more favorable attitudes. Advertising's affective function, therefore, is to persuade. Finally, advertising's conative function is to stimulate desire and cause consumers to buy the sponsored brand.

Lavidge and Steiner also specify which ad formats are best suited for each advertising function. Based on their guidance, we expect comparative ads to create greater sponsored brand awareness and knowledge, stronger preferences for and attitudes toward the sponsored brand, higher levels of intention to purchase the sponsored brand, and greater purchases of the sponsored brand than noncomparative ads do.

FIGURE 1
Hierarchy of Comparative Advertising Effects



Note: + sign if comparative is greater than noncomparative, and - sign if comparative is less than noncomparative. = paths tested but not hypothesized. - - - - = paths not tested.

The Effect of Comparative Advertising on Cognition

Advertising's cognitive function moves consumers from unawareness to knowledge about the sponsored brand by providing information and facts about the sponsored brand (Lavidge and Steiner 1961). Because comparison formats deliver different information to consumers than do noncomparative formats, they are likely to produce different effects on consumer awareness and knowledge. It is not surprising that comparative advertising researchers have devoted much attention to cognitive variables. Dependent measures of cognitive outcomes include attention, message and brand awareness, number of thoughts, perceived informativeness, perceived similarity between competing brands, and believability of the source and message. If comparative advertising distinctly affects consumers' cognitive activities, it should be evident in these variables.

Attention. Attention is the simple allocation of cognitive capacity to the advertisement (Engel, Blackwell, and Miniard 1993). One reason more of an audience should attend to comparative ads than to traditional ads (Wilkie and Farris 1975) is that two brands are named in comparative ads. A comparative ad is personally relevant to users of the sponsored brand because it gives information about a brand they may use. Also, the comparative ad should be personally relevant to users of the comparison brand because it gives them information about a brand they do use. Consequently, the use of two (or more) brands in comparative ads attracts the self-relevant selective attention of more people than advertisements featuring a single brand. Pechmann and Stewart (1991) predicted and found that a low-share sponsor's advertisement gets the most attention when it is compared to a competitor with many users (a high-share brand).

A second reason that comparative ads might receive more attention is information content (Muehling, Stoltman, and Grossbart 1990). Users of the sponsor brand—most likely the lesser-known of the two—may read comparison ads because they expect new and unique kinds of information. Specific attribute information presented in the comparisons may not be accessible otherwise. Noncomparative ads are unlikely to give such explicit information. The potential for increasing consumers' information was one reason the FTC reputedly did not condemn comparison ads (Wilkie and Farris 1975). If consumers perceive that specific attribute comparisons provide unique and useful information, they may attend to comparative ads more. The studies we reviewed operationalized attention as reading part of the advertisement (e.g., Muehling, Stoltman, and Grossbart 1990; Pechmann and Stewart 1990a).

H₁: Consumers will attend to comparative ads more than non-comparative ads.

Awareness. Awareness is knowing the information presented in the message (i.e., message awareness) and knowing the sponsor's brand name (i.e., brand name awareness). Consumers are considered aware of a sponsor's brand if they can recall the brand name. Similarly, they are aware of the advertised message if they can report any of it. Wilkie and Farris (1975) believe that aggregate recall levels should

be higher for comparative ads, because more people attend to them than to traditional ads.

Attention is a necessary, but not sufficient, condition for making consumers aware of the message or the sponsored brand. Wilkie and Farris (1975) speculate that comparison ads attract the consumer's attention and increase awareness of the comparison brand, but do not increase awareness of the sponsor brand. Nonetheless, comparative ads may enhance consumers' brand and message awareness by providing more information than do noncomparative ads. The additional information may cause deeper processing and more retrieval cues. This can result in improved memory of the advertising message, which is favorable to the sponsored brand. Therefore, message recall should be greater for comparative than for noncomparative ads (Muehling, Stoltman, and Grossbart 1990). The additional information in comparative ads is expected to increase the accessibility and retrieval of the sponsored brand's name from memory.

H_{2a}: Consumers will recall more of the messages in comparative ads than in noncomparative ads.

H_{2b}: Consumers will recall the sponsor's brand name more in comparative ads than in noncomparative ads.

Information processing. Comparative ads are more involving for the same reasons that they attract attention (i.e., they are personally relevant). Greater involvement with comparison ads than with noncomparative ads should cause thoughts to be more elaborate (Greenwald and Leavitt 1985; Krugman 1965). As was mentioned previously, comparison ads, which make point-by-point contrasts between the comparison brand and the sponsored brand (e.g., Swinyard 1981), should induce greater mental activity and elaboration (Muehling, Stoltman, and Grossbart 1990) and more central processing (Dröge 1989) than noncomparative ads do. More elaborate message processing should generate more thoughts in response to the comparative ads than in response to the noncomparative ads. Another reason that comparative formats foster more elaborate processing is that they are more stimulating (Dröge 1989; Pechmann and Esteban 1994). Stimulation motivates consumers to argue either in support of or against the main appeal in the message. The direction depends on their previous experience and familiarity with the comparison brand. Both involvement and stimulation should work to increase the number of thoughts consumers generate in reaction to comparative ads. In noncomparative ads this same degree of mental activity is not likely because the same amount and type of information is not available for processing (Muehling, Stoltman, and Grossbart 1990). Information processing is typically measured by the relative number of message-related consumer thoughts that an advertisement generates.

H₃: Comparative ads elicit more consumer thoughts than non-comparative ads.

Informativeness. Perceived informativeness is not the amount of information, per se, but the degree to which consumers perceive or infer the advertisement to be informative. Comparative ads are perceived to be more informative because they present and compare two brands on one or more attributes (Goodwin and Etgar 1980; Iyer 1988; Pride, Lamb, and Pletcher 1979; Suján and Dekleva 1987; Wilkie

and Farris 1975). Consumers may perceive comparative information to be uniquely informative because the explicit attribute comparisons help them differentiate brands. This kind of information is not available in noncomparative ads. Wilkie and Farris (1975) use the same argument to justify the value of comparative ads.

H₄: Consumers will perceive comparative ads to be more informative than noncomparative ads.

Positioning. Positioning the sponsored brand as similar to the comparison brand (i.e., association) is the explicit goal of some comparative ads and the unintentional effect of others (Dröge and Darmon 1987; Gorn and Weinberg 1984; Pechmann and Ratneshwar 1991; Sujan and Dekleva 1987). Because comparative ads compare two brands on one or more attributes, consumers may link them together in the same cognitive categories, as well as infer similarities on other attributes (Pechmann and Ratneshwar 1991). We expect association effects and higher brand similarity ratings when advertisements say that the brands are similar (i.e., associated). However, when a comparison brand is not mentioned, as in noncomparative ads, association between brands is counterintuitive. Noncomparative ads do not explicitly associate the sponsored brand with another. However, noncomparative ads position the sponsored brand as a member of a product class or product type (Sujan and Dekleva 1987), thereby inviting comparisons with other brands within these categories. Thus, both direct comparative and noncomparative ads can be associative in nature (Dröge and Darmon 1987). Because noncomparative ads do not refer directly to the comparison or dominant brand in the product category, the association is more subtle and must be inferred (e.g., from the similarity of the package or the new product's market standing) (Dröge and Darmon 1987). Sujan and Dekleva (1987) found no differences between comparative and noncomparative ads, for both experts and novices, in the perceived similarity of brands at the product type level.

Pechmann and Ratneshwar (1991) found that consumers perceive similarities between the comparison and sponsored brands even when the comparative ad differentiated the brands. They reason that consumers categorize the sponsored brand as similar to the comparison brand because (1) consumers assume that two brands that are compared must be comparable; (2) consumers learn through socialization that leaders are copied, and they deduce that the brands are probably similar; and (3) consumers infer from visual similarities that the brands are functionally similar.

H₅: Consumers perceive greater similarity between the sponsored brand and the comparison brand when sponsors use comparative ads than when they use noncomparative ads.

Believability. Believability has two components: (1) believability of the source or source credibility and (2) ad believability, which refers to the perceived truthfulness of the ad, or message. Wilkie and Farris (1975) conjecture that comparative ads should be more believable than noncomparative ads. However, recent research has shown that comparative formats may be less believable (both in source and message), particularly for users of the comparison brand (Swinyard 1981). Comparison brand users may attribute desperation and hostility to sponsors making comparative

claims, because these claims challenge consumers' prior beliefs. Believing the source and the content of the message requires that the consumer change some of his or her existing beliefs. Rather than change strongly held beliefs, skeptical consumers may respond to comparative claims by (1) derogating the source of the message, (2) counterarguing with the message claims, (3) making statements about the curiosity of the claims, or (4) making other positive or negative statements about the message (Swinyard 1981; Wright 1973). Belch (1981) found that consumers derogate the source of comparative claims but not the source of noncomparative claims. Others have found that comparative ads generate more counterarguing than noncomparative ads and are perceived to be less credible (Swinyard 1981; Wilson and Muderrisoglu 1979).

We operationalize believability of the source as the number of counterarguments and the number of source derogation thoughts. Believability of the message includes the believability, credibility, and persuasiveness of the claim.

H_{6a}: Consumers attribute less credibility to the source of comparative ad claims than to the source of noncomparative claims.

H_{6b}: Consumers believe comparative claims less than noncomparative claims.

The Effect of Comparative Advertising on Affect

Affective responses to comparative advertising include consumers' feelings (likes or dislikes) about the advertisement (A_{ad}), and their feelings about the sponsored brand (A_{br}). Attitudes are one of the consequences of the information that is processed during the cognition stage. The ad format (comparative versus noncomparative) should directly influence affective responses. Ad format should also indirectly affect attitudes through the cognitive variables, though we did not test these effects because the relevant information was not available.

Attitude toward the ad. Attitude toward the ad (A_{ad}) denotes a consumer's feelings and overall attitude toward the ad format. The extant research has shown that comparative ads generate fewer favorable attitudinal responses toward the advertisement than noncomparative ads (Belch 1981; Gorn and Weinberg 1984; Swinyard 1981). One explanation for this is that users of the comparison brand see the comparison as an attack on their brand, causing them to either derogate the source of the message or counterargue with the message content (Wilkie and Farris 1975). Empirical evidence seems to support this explanation (Belch 1981; Gorn and Weinberg 1984; Swinyard 1981). Dröge (1989) reviewed the literature and found that comparative ads are impersonal, less friendly and pleasant, more aggressive and intense, and less believable and honest. Attitude toward the ad includes consumers' self-reports on the perceived friendliness/offensiveness of the ad and their overall attitudes toward the ad.

H₇: Consumers' attitudes toward comparative ads are less positive than their attitudes toward noncomparative ads.

Attitudes toward the sponsor's brand. Whether consumers' attitudes toward the ad (A_{ad}) can transfer to the

sponsor's brand is arguable. MacKenzie, Lutz, and Belch (1986) support the notion that feelings and attitudes toward the sponsored brand (A_{br}) are positively influenced by attitude toward the ad (A_{ad}). Muehling (1987) provides evidence that shows that comparative ads have a positive influence on attitude toward the sponsor (A_{br}) across five different types of comparative ad formats. However, Dröge (1989) found that A_{ad} predicts A_{br} for noncomparative ads, but not for comparative ads. It appears that the question of whether attitudes toward the comparative ad (A_{ad}) transfer to the sponsored brand is not settled.

Another factor influencing attitudes toward the sponsored (A_{br}) brand is the association with the comparison brand. To the extent that consumers perceive the sponsor's brand to be similar to the comparison brand we might expect their attitudes toward the sponsored brand (A_{br}) to mirror their attitudes toward the comparison brand (Dröge and Darmon 1987). If attitudes toward the comparison brand are positive, perceived similarity may lead to more positive attitudes toward the sponsored brand (A_{br}). It must be noted that in several studies, the comparison brands are market leaders, and consumers are likely to have positive attitudes toward them. In these cases, we expect attitudes toward the sponsor's brand (A_{br}) to be more favorable when the advertisement is comparative than when it is noncomparative. Finally, because comparative ads allow consumers to have clear and focused perceptions (Wilkie and Farris 1975) and to differentiate the brands (Dröge 1989), they should have a more favorable effect on consumers' attitudes toward the sponsored brand (A_{br}) (Goodwin and Etgar 1980; Gorn and Weinberg 1984; Levine 1976; Mazis 1976; Shimp and Dyer 1978) than noncomparative ads do.

H_8 : Consumers' attitudes toward the sponsored brand (A_{br}) are more positive when the advertisements are comparative than when they are noncomparative.

The Effect of Comparative Advertising on Conation

The conative component may be the most important because it shows whether comparative advertising affects consumers' purchase behavior (Pechmann and Stewart 1990a). Previous research frequently operationalized conation as purchase likelihood and infrequently as actual purchase behavior (e.g., coupon redemption by Demirdjian [1983] and Swinyard [1981]). Nevertheless, the effect of ad format on the consumer's intention to purchase and actual purchase is equivocal. Lavidge and Steiner (1961) reason that if a comparative ad positively influences cognitive and/or affective responses, it should favorably influence behavioral intentions and behavior. Dröge (1989) provides partial support: She found a stronger relationship between attitude toward the sponsored brand (A_{br}) and purchase intention for comparative ads than for noncomparative ads. Additionally, Dröge found that cognition has no direct effect on intention; it is mediated by attitude. Swinyard (1981) found no difference between comparative and noncomparative ads on intention to purchase. However, he found a significant effect on purchase behavior due to noncomparative ads' one-sided claims (i.e., coupon redemptions). Presumably, if the advertising claim is accepted and causes a favorable attitude

toward the sponsored brand (A_{br}), the consumer is more likely to purchase it.

H_{9a} : Consumers' intentions to purchase the sponsored brand are greater when the ad is comparative than when it is noncomparative.

H_{9b} : Consumers are more likely to purchase the sponsored brand when the ad is comparative than when it is noncomparative.

Six Potential Moderating Variables

We used three criteria to select from the many potential variables moderating the relationship between ad format and consumer response. Our analysis of moderators is limited to those that (1) are theoretically relevant, (2) provide a sufficient number of effect sizes to test the relationship, and (3) are important to advertisers. Studies examining cognition provided little guidance as to what factors should moderate the ad format/cognition relationship or why they do. Therefore, our hypothesis development is limited to attitude toward the brand (A_{br}) and intention to purchase; no hypotheses were developed for the cognitive dependent variables. The moderators are (1) the sponsored brand's competitive position (Iyer 1988; Mazis 1976; Pechmann and Stewart 1990a; Shimp and Dyer 1978), (2) the comparison brand's market position (Iyer 1988; Mazis 1976; Pechmann and Stewart 1990a; Shimp and Dyer 1978), (3) the sponsored brand's relative market position (Iyer 1988; Mazis 1976; Pechmann and Stewart 1990a; Shimp and Dyer 1978), (4) the comparative ad's credibility (e.g., Kavanoor, Grewal, and Blodgett 1997), (5) the factual content of the message (Iyer 1988), and (6) the nature of the dependent measure, that is, relative versus absolute (Miniard et al. 1993; Rose et al. 1993; Snyder 1992).²

Relative market position. Market position is thought to moderate the relationship between ad format (comparative versus noncomparative), ad persuasiveness (Pechmann and Stewart 1991), and intent to purchase the sponsor's brand (Pechmann and Stewart 1990a). Consumers are more likely to be positively influenced in favor of a low-share sponsored brand when it is compared to a high-share brand than when it is compared to a moderate- or low-share brand. There are three reasons for this. First, comparing low-share brands with high-share brands draws interest to the advertisement because of the high-share brand's personal relevance to many more consumers (Pechmann and Stewart 1990a). Second, comparing a low-share brand to one with a high share elevates the image of the brand with the lower share (Pechmann and Stewart 1990a). Third, comparing a new brand with an established brand or the market leader may be considered novel, receive more attention, and be perceived as more informative (Iyer 1988). This can result in a greater impact on consumers' attitudes and purchase intention. When the ad is noncomparative, any consideration of market position by consumers is based on implicit ad cues and should not have as great a systematic effect on their behavior as when the market share information is explicitly stated. Therefore, we expect that information about market position

²Examining the main effects of these six variables is outside the scope of this study.

has a substantial positive effect on consumers' responses to the ad when it is comparative, but little or no effect when it is noncomparative.

Thus, when the sponsored brand is new or fictitious, the relative effectiveness of comparative advertising should be greatest, and when the sponsored brand is an established brand or market leader we should notice decreases in the relative effectiveness of comparative ads (new brands > established followers > market leaders).

H₁₀: Consumers should have more favorable sponsored brand attitudes and greater purchase intentions after viewing comparative ads, versus noncomparative ads, when the sponsor's brand is new to the category than when it is an established brand or market leader.

The comparison brand's market position also might affect the influence of ad format. There is relatively little advantage in using a new brand as the comparison brand, because it is relevant to fewer consumers and is less informative than established brands. Alternatively, established brands and market leaders are relevant to more consumers, are more informative, and are suitable targets for brand association strategies (new brands < established followers < market leaders).

H₁₁: Consumers' sponsored brand attitudes should be most positive and their purchase intentions greatest after viewing comparative ads, versus noncomparative ads, when the comparison brand is the market leader. The difference between comparative and noncomparative ads should decrease when the comparison brand is an established follower, a new brand, or a fictitious brand.

Thus, sponsors with new or unfamiliar brand names are likely to benefit from comparative advertising more than the established brands or market leaders. Conversely, when the sponsored brand is a market leader, it should benefit less from comparative advertising than will established brands and new brands (Pechmann and Stewart 1990a, 1991).

H₁₂: Consumers' sponsored brand attitudes should be more positive and their intentions to purchase greater after viewing comparative ads, versus noncomparative ads, when the sponsor's brand market position is less than the comparison brand. This effect should be attenuated when the sponsor's brand market position is greater than or equal to the comparison brand.

Source credibility enhancers. Previously, we hypothesized that consumers perceive comparative ads to be less believable than noncomparative ads (H_{6a} and H_{6b}) and that they induce source derogation and counterarguing. Bolstering the credibility of comparative ads should decrease consumers' tendencies to derogate the source and counterargue with the major claims. Enhanced source credibility should benefit comparative ads more than noncomparative ads, because the latter are inherently more believable. When credibility is high, comparative ads will be more persuasive than noncomparative ads. When credibility is low, comparative ads will be equal to or less persuasive than noncomparative ads. Swinyard (1981) found that one-sided noncomparative claims were more acceptable to consumers than one-sided comparative claims. The opposite was true when credibility was enhanced by both sides of the claim

being presented. Steps to reduce or moderate the negative effects of source derogation and counterarguing and increase the effectiveness of comparative advertising relative to noncomparative ads include (1) using two-sided messages (Etgar and Goodwin 1982; Swinyard 1981), (2) establishing credible sources (Gotlieb and Sarel 1991), (3) substantiating the claim (Golden 1979), and (4) attending to the content of the message (Iyer 1988).

H₁₃: Consumers' attitudes toward the sponsor's brand will be more positive and their purchase intentions greater after viewing comparative ads, versus noncomparative ads, when the credibility of the ad is enhanced. The relative effectiveness of comparative ads will decrease when the credibility of the ad is not enhanced.

Message content. Another moderating factor is the message content of the advertisement. The credibility of a comparative claim may be enhanced by including factual information in the content of the message (Iyer 1988). Factual information (i.e., information that is objective in nature) compared with evaluative information (i.e., information that is subjective in nature), elicits fewer counterarguments (Edell and Staelin 1983), encourages more support arguments (Edell and Staelin 1983), and enhances the visual-imaging abilities of consumers (Iyer 1988; Paivio 1969; Paivio, Yuille, and Madigan 1968). Thus, factual information may be perceived as more informative. As a result, consumers are less likely to derogate the source of the message and argue against the comparative claim.

H₁₄: Consumers' attitudes toward the sponsor's brand will be more positive and their purchase intentions greater after viewing comparative ads, versus noncomparative ads, when the message content is factual rather than evaluative in nature. The relative effectiveness of comparative ads over noncomparative ads will decrease when the message content is evaluative.

Relative versus nonrelative measures. Finally, Miniard and colleagues (1993) have alerted us to a measurement factor that may attenuate the magnitudes of the comparative/noncomparative advertising effects in previous research. Rose and colleagues (1993) and Miniard and colleagues (1993) demonstrate that a relative scale, such as "How likely is it that brand X is more durable than Brand Y?" produces larger effects than absolute scales, such as "How likely is it that Brand X is durable?" They hypothesize that a dependent measure's sensitivity to an advertising effect depends on the correspondence between the frame of the advertising message and the response frame. If the message is framed as a comparison between a new brand and established brand, the message is likely to be encoded and stored in memory in relative terms (i.e., the sponsored brand relative to the comparison brand). Because noncomparative messages are not coded in relative terms, they are not encoded or stored as such by the targeted consumers. Likewise, the dependent measure can be framed in relative or absolute terms. Miniard and colleagues show that if the frame of the dependent measure does not correspond to the frame used in the message, the advertising effect may not be detected. Their compelling arguments are supported by empirical evidence. Therefore, we examine whether the relationship between the

comparative ad frame and its effect is moderated by the way the dependent variable is framed (i.e., relative versus nonrelative measures).

H₁₅: The effects of comparative advertising versus noncomparative advertising on consumers' attitude toward the sponsor's brand and purchase intention should be greater when relative measures are used than when nonrelative measures are used. Nonrelative dependent measures should attenuate the magnitude of the comparative advertising effect.

Review Procedures

Sampling Frame and Search Process

We synthesize 22 years (1975–1996) of empirical research (published and not published) on the effectiveness of comparative advertising. The search for relevant studies began with thorough computerized searches using ABI/INFORM, DIALOGUE, and INFOTRAC. Additionally, the search examined the Business Periodicals Index, ERIC documents, PSYCHLIT, Social Sciences Citation Index, and Dissertation Abstracts. Next, we examined all journals containing research on advertising. This effort included the *Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Research*, *Journal of the Academy of Marketing Science*, *Journal of Advertising*, *Journal of Advertising Research*, all journals that were referenced in the reviewed articles, and the proceedings from national and regional professional associations, including the American Marketing Association, Association for Consumer Research, American Advertising Association, and Academy of Marketing Science. We also examined all of the reference lists from the comparative advertising articles that we had collected. Finally, we contacted several comparative ad researchers so that we could obtain their unpublished working papers. The search produced more than 100 published and unpublished articles (including dissertations) on comparative advertising. However, only 77 studies (54 published and 23 unpublished) compared comparative advertising to noncomparative advertising and provided the necessary information to calculate effect size estimates.³

³The following types of articles were not included in our meta-analysis articles because they did not provide the necessary information: conceptual and/or review pieces, content and frequency analyses (e.g., Jackson, Brown, and Harmon 1979), those that examined general perceptions about comparative advertising (e.g., Rogers and Williams 1989), articles that did not contrast comparative and noncomparative ads (e.g., Etgar and Goodwin 1982; Muehling 1987), studies that made no brand comparisons (e.g., political advertising—see Hill [1989]—and price comparison studies—see review by Grewal and Compeau [1992]), and studies in which the empirical or the conceptual domain did not provide statistics that could be converted to d-statistic effect size. We also excluded studies that used analyses fundamentally different from other studies (e.g., Pechmann and Stewart [1991] used ANOVA in which the total degrees of freedom was based on total number of ads used and not on the number of subjects).

Effect Size Computation

Effect size estimate is defined as an estimate of the degree to which the ad format/effectiveness relationship is present in the population of comparative advertising research. The term *effect size* refers to the sample estimate of the population effect regardless of the particular effect size indicator used (Fern and Monroe 1996). We converted the various test statistics (F, t, Z, chi-square) to Cohen's d following the formula suggested by Fern and Monroe (1996) and Rosenthal (1984). *Cohen's d* is the ratio of the difference between the means to the pooled within-group standard deviation. The effect size (weighted d) was weighted using the relevant sample size and reliability information (see the Appendix). We corrected the effect sizes for attenuation due to measurement errors if a reliability estimate was available for at least one study for a particular dependent variable (see the Appendix). On the basis of the available reliability estimate and the number of items used in individual studies, we computed reliabilities using the Spearman-Brown formula (Hunter and Schmidt 1990). Thus, the rating scale measures, such as informativeness, ad believability, ad attitude, brand attitude, and purchase intentions, were corrected.

Coding for Meta-Analysis Variables

Some studies provide more than one effect size estimate. We accumulated results and calculated the average effect within a study when an article gave separate reports for different products but used the same subjects, because separate effect size estimates for each of the multiple products in a single experiment would weigh each study's contribution to the average effect size, proportional to the number of products it investigated. This procedure eliminated the disproportionate influence from studies that examined multiple products. When subjects or dependent variables differed, we calculated separate effect size estimates across products. The independent variable used to partition studies for calculating the effect size estimates was ad format (comparative ad versus noncomparative ad). Comparative ads were those that explicitly or implicitly compared the sponsor's brand with another brand in the product category—noncomparative ads did not. In the few studies using three ad levels (e.g., direct comparative, Brand X, noncomparative), we used direct comparative versus noncomparative ads to calculate the effect size estimate. The d-statistic was coded positive if the comparative ad produced more favorable results than the noncomparative ad and negative otherwise.

Moderating variables were included in our analysis when (1) they were theoretically justified by either previous empirical or conceptual articles (e.g., Etgar and Goodwin 1977; Grossbart, Muehling, and Kangun 1986), (2) they were used in a least two previous studies and allowed statistical analysis, and (3) they were managerially relevant. The use of these criteria resulted in the six moderating variables discussed previously. We limit the analysis to the dependent variables most commonly used across studies (e.g., cognition: message awareness, informativeness, similarity, and message believability; affective responses: attitude toward the sponsor's brand; and conation: intention to purchase the sponsor's brand).

Analysis and Results

Method of Analysis

Our objective was to discover whether comparative advertising is more effective than noncomparative advertising. To this end, we calculated the simple average effect size estimate (*d*), the weighted average effect size, the standard error of the estimate, the 95% confidence interval (Hunter and Schmidt 1990), and the file drawer *N*, which indicates how robust the results are (Rosenthal 1984). If the confidence interval does not include zero, the effect is significant.

The file drawer *N* tells us how vulnerable our analysis is to future null results. It also represents the number of unpublished null-effect studies (i.e., the studies that have not been published because of null results) that would be needed to bring the significant effect (i.e., the simple average *d* in Table 1) down to the level of just significant. The file drawer *N* was estimated for three levels of "just significance"—.05, .10, and .15. For example, to bring the significant effect of ad format on attention down to the level of just significant at $\alpha = .05$, it would require 32 null-results to be uncovered and added to our analysis. In Table 1, we summarize all of this information. Where applicable, the reported results are calculated from effect sizes corrected for attenuation due to the unreliable dependent measure. Positive mean effect sizes indicate that the effect of comparative advertising is greater than that of noncomparative advertising on the dependent variable. Negative mean effect sizes indicate that the effect of noncomparative advertising is greater.

Results of Main Effects Hypothesis Tests

Cognitive component. Consistent with Wilkie and Faris's (1975) predictions and H_1 , the comparative format generates more attention than noncomparative ads. Also, comparative ads are more effective than noncomparative in increasing advertising message awareness (H_{2a}), brand name awareness (H_{2b}), and increased message processing (H_3).

The null effects of comparative advertising on the informativeness of the ads (H_4) and positioning, (i.e., perceived similarity of the sponsored brand to the comparison brand) (H_5) are unexpected. Before concluding that comparative ads are not more informative, consider that the average effect size is positive and the lower bound of the confidence interval (-.01) just barely includes zero. Arguably, comparative ads may be as informative or more informative than noncomparative ads depending on whether the notion of marginal significance is accepted. Comparative ads do not appear to be more effective in creating the perception that the sponsored brand is similar to the comparison brand.

Source believability is less for comparative than noncomparative ads (H_{6a}). This finding is consistent with the notion that consumers who are exposed to comparative ads may use source derogation as an information processing strategy (Belch 1981). When consumers derogate the source of a persuasive communication, they also may infer that the advertiser and the message are not credible (H_{6b}). However, the negligible and nonsignificant difference in the average message believability is inconsistent with this explanation. If the source is less credible, we would expect the message to be less credible, unless consumers differentiate between these two origins of credibility. Additionally, several studies use fictitious sponsor brands, which should be intuitively less credible. Finally, the lack of difference in claim believability might be explained by other study factors, such as the types of claim substantiation that were used in the research (e.g., Dröge 1989; Grossbart, Muehling, and Kangun 1986; Park, Lessig, and Lee 1990). Claim substantiation might enhance message believability for both comparative and noncomparative ads; however, the effect should be greater for comparative ads. We examine this possibility in our analysis of moderators.

Affective component. The results indicate that comparative ads generate more negative attitudes toward the ad (H_7), but more favorable attitudes toward the sponsored

TABLE 1
Main Effects Hypothesis Tests

Dependent Variables	H_0	N	Simple Average <i>d</i>	Weighted Average <i>d</i>	Standard Error	95% Confidence Interval		File Drawer N		
						LCI	UCI	.05	.10	.15
Attention	H_1	3	.59	.47	.17	.13	.81	32	15	9
Message Awareness	H_{2a}	18	.43	.27	.13	.01	.52	136	59	33
Brand Awareness	H_{2b}	24	.38	.33	.12	.09	.57	160	68	37
Processing ^a	H_3	5	.11	.36	.06	.03	.29	5	0	0
Informativeness ^b	H_4	35	.21	.11	.05	-.01	.23	NC	NC	NC
Similarity	H_5	23	.07	-.17	.13	-.42	.09	NC	NC	NC
Source Believability	H_{6a}	8	-.30	-.26	.10	-.45	-.07	40	16	8
Ad Believability ^b	H_{6b}	36	-.07	.01	.06	-.13	.12	NC	NC	NC
Ad Attitude ^b	H_7	20	-.30	-.28	.09	-.45	-.20	100	40	20
Brand Attitude ^b	H_8	42	.29	.23	.05	.13	.32	202	80	39
Intention ^b	H_{9a}	47	.27	.20	.04	.12	.28	207	80	38
Overt Behavior	H_{9b}	6	.46	.46	.15	.16	.75	48	21	12

^aEffect size is homogeneous.

^bEffect size was corrected for measurement error. The uncorrected simple average *d*'s are informativeness (.19), ad believability (-.06), ad attitude (-.25), brand attitude (.26), and intention (.25).

Note: NC means the file drawer *N* was not calculated, because the 95% confidence interval contained zero.

LCI = lower confidence interval. UCI = upper confidence interval.

brand (H_8), than noncomparative ads. These findings are inconsistent with the affect transfer explanation.⁴ Perceived similarity to the comparison brand does not account for more favorable brand attitudes in comparative ads, because the effect of ad format on similarity is not significant. Further research may provide explanations for this apparent paradox.

Conative component. Compared to noncomparative ads, comparative ads appear to increase both purchase intention (H_{9a}) and purchase behavior (H_{9b}). For many advertisers, the most important findings are that comparative ads influence behavioral intentions and actual buying behavior more than noncomparative ads.

The hierarchy of comparative advertising effects. It is not our goal to test the hierarchical model outlined in Figure 1. However, we examined the correlations among the effect sizes associated with the three major constructs in the model to determine if it has face validity. All of the correlations are positive (ranging from .53 to .93) and, with one exception, significant. The relationship between message awareness and brand attitude has a large correlation coefficient ($r = .93$), but with only three observations, it was not significant.

Results of Moderator Hypothesis Tests

To determine whether the relationships uncovered in our analysis of main effects would be affected by other causal factors, we analyzed several moderator variables. The dependent variables for this analysis are cognition (message awareness, informativeness, similarity, and ad believability), brand attitude, and purchase intention. Note that when analyzing the impact of a moderator variable on a given dependent variable, we use all available data points (i.e., studies that explicitly manipulate a specific moderator as an independent variable provide multiple data points). The number of observations used in each hypothesis test varies because of missing data. On the basis of our hypotheses, six variables were coded as moderators. The results are presented in Table 2.

Moderator effects on cognition. As was mentioned previously, there is little theory about the effects of moderating variables on the relationship between ad format and cognitive variables. Nevertheless, we tested these effects to complete our analysis; we have no hypotheses about these moderators. Because relative measures and the factual/evaluative nature of message content are not included in studies on cognition, we only examined the moderating effects of the sponsored brands' market position, the comparison brands' market position, the relative market position of the brands, and ad credibility enhancers (i.e., attempts to substantiate the message claim).

Message awareness is greater for comparative ads when the comparison brand is the established brand than when it is the market leader. Note, however, that effect size estimates were not available when the market leader is the sponsored brand or when a new brand is used for the comparison brand. These omissions from this research stream

make intuitive sense, because the market leader has little to gain by comparing itself to an established or new brand. Remember that we found that comparative ad messages are recalled more than noncomparative messages. This disparity increases when relative market position is considered. When the sponsored brand's relative market position is equal to or greater than the comparison brand's market position, the comparative ad's message awareness increases substantially over that of noncomparative ads. Finally, comparative ads create more message awareness when credibility enhancers are not used. Credibility enhancers may bewilder or confuse consumers, causing them to focus on the source or reasons for the credibility claim rather than on the content of the message (Belch 1981).

Informativeness differs across ad formats depending on the levels of the sponsored brand's market position. Apparently, consumers perceive the informativeness benefit from comparative ads to be greater for established sponsored brands than for new brands or market leaders. When the sponsored brand is the market leader noncomparative ads are perceived to be more informative than comparative ads. The informativeness effect size estimate is larger for established comparison brands than the market leader, but the contrast is nonsignificant. Again, there appears to be no reason to put a new brand in the role of comparison brand, and no effect sizes were obtained for this level. The moderating effect sizes of relative market position and ad credibility enhancers are of approximately the same magnitude and are not statistically significant.

Perceived similarity between the sponsored and comparison brands is significantly greater for comparative ads when the sponsored brand is an established brand than when it is a new brand. This is not surprising, because comparison brands are almost always established brands, and sponsored brands that are established in the market are objectively more similar to the comparison brand. Likewise, the sponsored brand in comparative ads is perceived to be more similar to the established comparison brand than the market leader, but the effect is not significant. Generally, comparative ads appear to be more effective when the sponsored brand's relative market position is equal to or greater than the comparison brand's, but this effect is not statistically significant. Ad credibility enhancers do not moderate the ad format/similarity relationship.

Ad believability does not differ significantly across different levels of the sponsored brand's market position, the comparison brand's market position, or ad credibility enhancers. Relative market position significantly moderates the relationship between ad format and ad believability. For sponsored brands with market positions equal to or greater than the comparison brand, noncomparative ads are perceived to be relatively more believable than when the sponsored brand's position is less than the comparison brand's.

Moderator effects on brand attitude. Comparative ads generate more positive consumer attitudes toward the sponsored brand than noncomparative ads when the sponsored brand is new to the category (H_{10}). This effect decreases when the sponsored brand is well established and reverses when the sponsored brand is the market leader (i.e., noncomparative ads are more effective than comparative ads).

⁴As a reviewer noted, these studies used single ad exposures, and repetition may be necessary for affect transfer to occur.

TABLE 2
Effects of Moderator Variables

Moderator (H ₀)	Level	Message Awareness			Informativeness			Similarity		
		Effect Size	Number of Studies	Test Statistic (Z-value)	Effect Size	Number of Studies	Test Statistic (Z-value)	Effect Size	Number of Studies	Test Statistic (Z-value)
Sponsored brand's market position (H ₁₀)	New	.46	8	1.28	.26	25	3.85 ^a	.03	18	2.27 ^a
	Established Leader	.71	4	—	.82	2	—	.30	4	—
Comparison brand's market position (H ₁₁)	New	—	—	—	—	—	—	—	—	—
	Established Leader	.77	3	1.99 ^a	.38	4	1.23	.22	5	1.28
Relative market position (H ₁₂)	Sponsor < Comparison Brand	.43	10	2.93 ^a	.28	26	.34	.06	20	1.45
	Sponsor ≥ Comparison Brand	1.12	2	—	.32	2	—	.29	3	—
Ad credibility enhancer (H ₁₃)	Yes	.11	6	4.22 ^a	.19	8	.14	.01	13	.35
	No	.71	6	—	.17	13	—	.06	4	—
Ad message content (H ₁₄)	Factual	—	—	—	—	—	—	—	—	—
	Evaluative	—	—	—	—	—	—	—	—	—
Type of dependent variable scale (H ₁₅)	Relative	—	—	—	—	—	—	—	—	—
	Nonrelative	—	—	—	—	—	—	—	—	—

Note: The effect sizes are simple average d's. For Sponsored Brand's market position and Comparison Brand's market position, the first Z-value refers to the comparison of the new brand's condition to the established brand's condition, the second Z-value refers to the comparison of the established brand's condition to the leader brand's condition, and the third Z-value refers to the comparison of the new brand's condition to the leader brand's condition.

*— = one or fewer studies examined this relationship.

^aSignificance tests on the Z-values for the cognitive variables were two-tailed tests with $p < .05$, the others were one-tailed tests.

TABLE 2
Continued

Moderator (H ₀)	Level	Ad Believability			Brand Attitude			Purchase Intentions		
		Effect Size	Number of Studies	Test Statistic (Z-value)	Effect Size	Number of Studies	Test Statistic (Z-value)	Effect Size	Number of Studies	Test Statistic (Z-value)
Sponsored brand's market position (H ₁₀)	New	-.09	19	.27	.58	27	7.22 ^d	.29	35	.29
	Established Leader	-.11	7		.09	19	5.70 ^d	.31	15	.94
Comparison brand's market position (H ₁₁)	New	—	—		-.09	5	7.80 ^d	.17	5	.12
	Established Leader	.01	12	1.48	-.14	3	4.65 ^c	.08	3	1.70 ^b
Relative market position (H ₁₂)	Sponsor < Comparison Brand	.00	18		.46	15	2.30 ^b	.15	15	2.71 ^b
	Sponsor ≥ Comparison Brand	-.04	21	2.59 ^a	.26	34	3.87 ^d	.36	38	3.30 ^d
Ad credibility enhancer (H ₁₃)	Yes	-.31	6		.49	38	8.54 ^d	.34	43	2.76 ^c
	No	-.11	14	.98	-.25	23		.11	12	
Ad message content (H ₁₄)	Factual	-.22	9		.42	24	3.65 ^d	.40	20	2.09 ^b
	Evaluative	—	—		.18	27		.18	24	
Type of dependent variable scale (H ₁₅)	Relative	—	—		.27	47	1.91 ^b	.30	47	2.32 ^b
	Nonrelative	—	—		.54	5		.01	5	
		—	—		.64	26	11.00 ^d	.48	15	3.55 ^d
		—	—		-.05	26		.21	41	

Note: The effect sizes are simple average d's. For Sponsored Brand's market position and Comparison Brand's market position, the first Z-value refers to the comparison of the new brand's condition to the established brand's condition, the second Z-value refers to the comparison of the established brand's condition to the leader brand's condition, and the third Z-value refers to the comparison of the comparison of the comparison of the comparison of the new brand's condition to the leader brand's condition.

*— = one or fewer studies examined this relationship.

^aSignificance tests on the Z-values for the cognitive variables were two-tailed tests with $p < .05$, the others were one-tailed tests.

^b $p < .050$.

^c $p < .010$.

^d $p < .001$.

Contrary to H_{11} , the difference in attitude (between comparative and noncomparative ads) toward the sponsored brand is most positive when the comparison brand is established in the product category rather than when it is the market leader. When the sponsored brand's market share is less than the comparison brand, comparative ads result in significantly more positive attitudes toward the sponsored brand (H_{12}); otherwise noncomparative ads result in more positive attitudes than comparative ads. These results indicate that comparative advertising is most effective in enhancing the sponsored brand's attitude when the sponsor is new to the category and the comparison brand is established in the market but is not the market leader.

As we expected, enhancing the credibility of comparative ads leads to a significant increase in the favorableness of attitudes toward the sponsored brand (H_{13}). Contrary to H_{14} , when comparative ads contain evaluative messages, their impact on attitudes is greater than when they are factual. Factual information may be more informative, but it does not appear to influence consumers' attitudes more than evaluative information. This seems to suggest that comparative ads do not foster attribute-based attitude formation; rather, they seem to inspire an affective response. Stronger conclusions must await further research on these relationships.

Relative attitude scales account for greater effects due to comparative advertising than do absolute scales. For the latter scales, noncomparative ads generate more positive attitudes than comparative ads. According to Rose and colleagues (1993) and Miniard and colleagues (1993), this makes sense because relative measures correspond to the relative nature of comparative ads, and absolute measures correspond to the nonrelative nature of noncomparative ads (H_{15}).

Moderator effects on intention to purchase. Contrary to H_{10} , the sponsored brand's market position does not affect the relationship between ad format and intention to purchase. However, the comparison brand's market position significantly moderates the relationship between ad format and intention to purchase the sponsored brand (H_{11}). Consumers are more likely to purchase the sponsored brand when the comparison brand is the market leader. When the sponsored brand's market share is less than the comparison brand's, comparative ads result in significantly greater intention to purchase the sponsored brand than noncomparative ads do (H_{12}).

Compared to noncomparative ads, comparative ads with enhanced credibility significantly increase intention to purchase (H_{13}). It was noted previously that comparative ads are less believable than noncomparative ads (see Table 1). However, purchase intention is higher when comparative ads are used. This inconsistency is resolved when the studies are differentiated on the basis of credibility enhancers. First, the use of credibility enhancers as a partitioning variable indicates that comparative ads with enhanced credibility are not significantly less believable than noncomparative ads. Second, more credible comparative ads increase the magnitude of the effect size, which indicates higher levels of intention to purchase the sponsored brand.

The moderating effect of message content on the relationship between ad format and purchase intention is supported. Comparative ads account for higher intention to purchase than noncomparative ads when they contain factual information instead of evaluative information (H_{14}). Apparently, factual information is more effective in enhancing intention to purchase, but evaluative information is more effective in increasing the favorableness of attitudes toward the sponsored brand. This seems to make sense, particularly if the attitudes are affect based.

The effect of comparative advertising on intention to purchase is greater when the dependent variable is measured with relative measures than when it is measured absolutely (H_{15}). These results are consistent with Miniard and colleagues' research and our previous findings regarding the effects of this moderator on brand attitude.

Managerial Implications

The inferences that can be drawn from our meta-analysis depend on the interpretation of the reported average effect sizes. For ease of interpretation, we converted the effect sizes in Table 1 to correlation coefficients ($r = d / [d^2 + 4]^{1/2}$). Most of the correlations are relatively small, ranging in absolute value from .10 to .23. However, low values of r do not mean that these findings are unimportant. Rosenthal and Rubin (1982) provide an intuitive and helpful way to interpret small effects which they call the *binomial effect size display* (BESD). We use the BESD to look at the increase in the effectiveness of comparative ads over noncomparative ads. If there are no differences due to the effects from the ad format used, responses to the dependent variables would be the same for those who view the comparative ad and those who view the noncomparative ad (i.e., $r = 0$) and there would be a 50:50 chance that the comparative ad would be more effective than the noncomparative ad. The average correlation coefficient for message awareness is .23, which means that comparative ads are read by 23% more people than noncomparative ads (i.e., the difference in effectiveness is 23%). The eight managerial implications that follow are based on similar BESD analyses. Keep in mind, however, that the studies producing these effects are controlled experiments with single exposures to the stimulus, and the consumers' responses were measured immediately after the stimulus materials were presented. Also, the number of studies used to calculate the effect sizes varies across independent and dependent variables. Thus, caution should be exercised in generalizing these findings to specific industry applications.

1. Message awareness (number of message points recalled) and brand awareness (brand name recall) are greater for comparative ads than for noncomparative ads, 12% and 16% respectively.
2. Source believability and ad attitude are negatively correlated with ad format ($r = -.13$ for both) which means that comparative advertising is 13% less believable and generates 13% less favorable attitudes toward the ad than noncomparative advertising.
3. Comparative advertising generates 22% more purchases than noncomparative ads.

4. When the comparison brand is established, 36% more message points are recalled in comparative ads than noncomparative ads.
5. Comparative advertising is responsible for 28% more favorable attitudes toward new sponsored brands than noncomparative ads are. This advantage is 5% for established sponsored brands.
6. When comparing the sponsored brand with an established brand, comparative ads seem to realize 22% more favorable sponsored brand attitudes than noncomparative ads do.
7. Enhancing the credibility of comparative ads may increase the favorable attitude toward the sponsored brand 21% beyond that of noncomparative ads.
8. By using the market leader rather than another established brand as the comparison brand, intentions to purchase the sponsored brand may be 17% above what would be expected from noncomparative ads.

In general, comparative advertising appears to be more effective than noncomparative advertising, particularly when the sponsored brand is new to the product category and when the comparison brand is the market leader. Apparently the advantages of comparative advertising help the "underdog." The major exception appears to be that the difference in message recall between comparative and noncomparative ads is greater when the sponsored brand is established than when the sponsor is new to the category.

Limitations

Meta-analyses are informative, but they have limitations, as well. First, our findings are based on secondary data; therefore, we cannot make strong causal statements about the relationships we have uncovered. Second, though meta-analysis proponents say that it is appropriate to test effects from just a few studies, we remain cautious. Recognizing the small *n* for some of the cognitive dependent variables (attention, processing, brand awareness, and source believability), we urge readers to be careful about drawing unwarranted conclusions from these results. Third, some of the moderating variables exhibit heterogeneous effect sizes; hence, other variables may account for some of the differences among these studies. Typical of meta-analyses, there were insufficient studies to conduct further tests for homogeneity. Therefore, more complex relationships remain unexplored. Fourth, for meta-analysis purposes, it is assumed that the effect sizes being accumulated are from a homogeneous population of studies and that any causes of heterogeneity can be isolated and identified. This often is not the case (Fern and Monroe 1996). There are many differences across a population of studies, and typically there are not enough observations to test for all of these differences. Therefore, the effect sizes we report should be treated as averages and interpreted with care.

Conclusions

Our meta-analysis reveals that comparative ads generally elicit (1) more attention to the ad, (2) greater message and brand awareness, (3) increased information processing, (4) more favorable brand attitudes, and (5) increased purchase intentions and increased purchase behaviors. Moreover, comparative ads evoke lower source believability and less

positive attitudes toward the ad. No differences were found for informativeness, believability of the advertised message, and positioning as similar to the comparison brand.

We identify several factors that moderate the relationship between ad format and attitude toward the sponsored brand and intention to purchase the sponsored brand. Those factors that enhance the effects of comparative advertising include relative market position, whether an attempt was made to enhance credibility, whether the message content is factual, and the type of scale used to measure the effect.

With the exceptions noted previously, on average, comparative advertising is more effective than noncomparative advertising. Moreover, this increase in effectiveness may translate into substantial advantages for those firms that use it. The analysis of moderating variables indicates that new brands that compare themselves to established brands benefit most from comparative advertising. Whether enhanced credibility is desirable depends on the advertising goal. Enhanced credibility has a positive effect on sponsored brand attitudes and intention to purchase the sponsored brand; however, it has a negative impact on message awareness. The differences in advertising goals should be seriously considered when deciding between comparative and noncomparative advertising.

Appendix

The *F*, *t*, *z*, and Chi-square values (with 1 df) were converted to Cohen's *d*. Within cumulation was carried out when necessary. Hunter and Schmidt (1990) recommend within cumulation if there is replication within a study, because the individual effect sizes are not likely to be independent of each other.

The weighted average of effect sizes *D* is given by $\Sigma(w_i * d_i) / \Sigma w_i$, where *d_i* is the individual effect size, *w_i* is the weight associated with individual effect size. The weight is equal to the sample size (*N_i*) for uncorrected effect sizes. If the effect size is corrected for attenuation due to unreliability associated with the measure of dependent variable, then the weight is equal to *N_i** α . Effect sizes were corrected for attenuation due to unreliability by dividing the effect sizes with the square root of α .

The confidence interval is computed around the weighted average effect size. It is actually a second-order analysis. The weighted average effect size in a given meta-analysis is only an estimate (even if all the currently available studies have been included in the analysis) of the domain-wide population effect size. The confidence interval gives the range within which the domain-wide effect size may be found. The confidence interval is given by weighted average effect size $\pm 1.96 * \text{standard error}(\text{Epsilon})$. Variance(Epsilon) is the sampling variance divided by *K* (the number of studies cumulated) if the effect sizes are homogeneous and observed variance divided by *K*, otherwise.

Homogeneity is checked with the formula (*K**observed variance) divided by sampling variance.

The formula for file draw is $K * (D - d_c) / d_c$, where *K* is the number of studies cumulated, *d* is the simple average of individual effect sizes, and *d_c* refers to the critical *d* value.

Because the denominator will be zero for $d_c = 0$, that comparison cannot be done.

To do a two-group moderator analysis, the effect sizes

were converted to r and then Z_r , where $Z_r = .5 * \text{Log}_e \left(\frac{1+r}{1-r} \right)$. Moderator procedures suggested by Rosenthal (1984) were followed.

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