

# THE EFFECT OF MISLEADING ENVIRONMENTAL CLAIMS ON CONSUMER PERCEPTIONS OF ADVERTISEMENTS

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This study investigates whether consumers who are exposed to an ad containing a deceptive environmental claim have significantly different attitudes about the ad than those consumers exposed to a similar non-deceptive ad. As hypothesized, higher levels of perceived deception were associated with lower levels of perceived corporate credibility, less favorable attitudes toward the ad, less favorable attitudes toward the advertised brand, and decreased purchase intentions toward the product in the ad. In addition, the study found that the *perception* of deception was enough to create negative feelings toward the ad, whether the ad was objectively misleading or not. Consequently, marketing and advertising managers need to proceed with caution when developing environmentally focused ad campaigns.

## INTRODUCTION

Continued concern for the environment (Schlossberg 1991) and specific concerns over the environmental impact of certain products (Chase 1991; Chase and Smith 1992; Cramer 1991) have led to more environmentally-focused advertisements (Ottman 1993) and an increase in the number of environmentally beneficial claims (Banerjee, Gulas, and Iyer 1995). Consequently, as "green" marketing claims for products continue to be an important part of advertisements for many products, concern over misrepresentation about environmental attributes of these products has also increased (Carlson, Grove, and Kangun 1993; Davis 1993, 1994). In

the present study, subjects were shown one of two ads, either an environmentally-misleading ad or an environmentally-factual ad, and then asked to give their attitudes toward the environment, the advertisement, the brand, the advertiser, and their purchase intentions toward the product. The responses of the two groups were analyzed and compared.

## BACKGROUND

A literature review indicates that many consumers express general concerns about the environment and that some purchase decisions are influenced by perceptions of the environmental friendliness of the product (Chase and Smith

1992; Roberts 1996). According to Jacquelyn Ottman (1993), environmentally conscious consumers can be defined "as those who actively seek out products perceived as having relatively minimal impact on the environment, . . . they are educated, affluent, mainstream and represent the most desirable of consumer target markets" (p. 27). These consumers are shaping a new trend called "environmental consumerism," where individuals attempt to "protect" themselves and the planet by purchasing "green" products and leaving non-green products on the shelves. According to a study done by the Roper Organization:

As of 1992, fifty-four percent of Americans read labels to see if products were environmentally safe, fifty-seven percent sought out products and packaging made from recycled materials, and thirty-four percent said they had boycotted a company that was careless towards the environment (Ottman 1993, p. 8).

In response to this consumer environmental concern, there has been extensive use of environmental or "green" claims as a means to market products (Carlson et al. 1993; Davis 1993) and to enhance their corporate image (Davis 1994; Vandermerwe and Oliff 1990). According to Market Intelligence Service, Ltd., a market research organization, in 1990, the number of "green" marketing claims for new products had risen to nine percent, up from only one half of one percent in 1985 (Davis 1991; Welsh 1991). However, one study found "that ninety-six percent of consumers felt they need more environmental information to make sense out of claims already being made" (Dagnoli 1990, p. 27).

With the sharp increase in environmental advertising, some environmental groups, such as the Environmental Defense Fund, have pointed out that there exists a growing confusion among consumers regarding the environmental claims of many products. This is partially because of the unclear meanings and no generally accepted definitions of claims such as "environmentally friendly," "degradable," and "ozone-friendly" (Silver 1992). Different companies use the same terms to promote different environmental benefits, and most consumers do not have the scientific knowledge required to understand the issues underlying many of these environmental claims. In addition, many comparisons made between products in advertisements (e.g., disposable diapers versus cloth diapers) focus on one environmental benefit, which may contribute to consumers making environmental assessments of products that are incomplete.

The Deceptive Advertising Clause of the Federal Trade Commission (FTC) Act ruled that ads are deceptive when claims made in the ad are (Cohen 1974):

- (1) factually incorrect;
- (2) subject to multiple interpretations, one of which is false;
- (3) guilty of omitting relevant information;
- (4) true, but the proof is false; or
- (5) "literally" true but creates a false impression.

Considering these guidelines, many companies may be in violation of advertising regulations in their attempt to market their "environmentally-friendly" products (Carlson et al. 1993).

In November 1989, attorneys general from ten states formed an ad hoc task force to review environmental advertising claims. Acting as enforcers of state statutes prohibiting deceptive advertising, the task force members initiated a number of investigations into environmental claims made by specific companies (Carlson et al. 1993). The Ten-States Attorneys General Task Force's most publicized case was the suit filed against the Mobil Chemical Company for misrepresenting its Hefty degradable trash bag as environmentally safe. Mobil was literally truthful and scientifically accurate in stating that its bags were "biodegradable" and would "break down." This scientific fact obscured the reality that the bag would only biodegrade if left exposed to wind, sun, or rain, not in a covered landfill (Davis 1991). As a result, the FTC in 1992 set general guidelines for environmental advertising claims: claims "must be substantiated and be clear as to whether any assumed environmental advantage applies to the product" (Carlson et al. 1993, p. 29).

Even with more specific guidelines, environmental product claims continue to be questioned, particularly for products such as aerosols, plastics, coffee filters, disposable diapers, and light bulbs (Scammon and Mayer 1995). Claims that most often come into question concern disposal, environmentally safe ingredients, energy efficiency, and harmful effects related to use (Scammon and Mayer 1995). Although many companies are sincere in their efforts to make their products more "eco-sound," some have made misleading product claims and have even fabricated claims in an attempt to appeal to green consumers (Davis 1992). The critics of this type of promotion have coined the term "green washing" to describe advertising in which the environmental claims are trivial, misleading, or deceptive (Carlson et al. 1993). Consequently, some companies are coming perilously close to "deceptive intent" in labeling and advertising of products by making ambiguous eco-claims (Welsh 1991).

## PRESENT STUDY

In view of the number of environmentally-related claims in advertisements, surprisingly little academic research has been published on the effects of "misleading" environmental claims on consumers' perceptions of advertising, sponsors of the ad, attitudes about the brands, and purchase intentions for the advertised brands. A sizable proportion (47%) of consumers may not believe ecological claims made in advertising (Fierman 1991), and only 30% of surveyed U.S. adults say they believe comparative environmental claims (Stisser 1994). Potential for confusion and/or deception from environmental claims may have important consequences for marketers who attempt to position and promote their products using these tactics. Besides the legal and ethical ramifications, potentially misleading claims may damage perceptions of both the advertised product and its sponsoring corporation (McGrath 1992). Therefore, marketers need to be aware of the repercussions of misleading and/or deceptive environmental advertising claims.

The present study was undertaken to determine whether misleading/deceptive environmental advertising claims have a direct and adverse effect on attitude toward the ad, and an indirect effect on advertiser credibility, attitude toward the brand, and purchase intentions. It may be that deceptive ad claims actually hurt the brands they seek to sell. We also were concerned about consumers' ability to detect deceptive claims where they are present. We felt that consumer concern for the environment (Davis 1991; Roberts 1996) would lead many to be more vigilant and cautious regarding green claims.

Thus, the specific questions addressed in this study are:

1. Do environmentally concerned consumers have the ability to identify misleading ads?
2. Do ads that are perceived as being deceptive have a significant effect on: perceptions of corporate credibility; attitude toward the advertisement, attitude toward the brand; and subsequent consumer purchase intentions?

Carlson et al. (1993) developed a matrix to classify environmental advertising claims of products as misleading or deceptive. They collected a large number of print advertisements from the years 1989 and 1990 and had a panel of five expert judges decide whether these advertisements were misleading and/or deceptive. The study classified environmental claims into five different types:

- (1) Product Orientation: an attribute of a product (e.g., biodegradable).

- (2) Process Orientation: deals with company production techniques or disposal methods (e.g., only uses recyclable materials).
- (3) Image Orientation: associates the organization with an environmental cause (e.g., committed to saving the rain forest).
- (4) Environmental Fact: an independent statement about the environment at large (e.g., planet is running out of land-fill space).
- (5) Combination of the above types.

Carlson et al. (1993) then categorized the misleading/deceptive advertisements or "green washed" claims into four types:

- (1) Vague/Ambiguous: The claim has a broad or an unclear meaning.
- (2) Omission: The claim omits information that is necessary to judge its truthfulness.
- (3) False/Outright Lie: The claim is fabricated.
- (4) Combination of the above types.

These categories can assist marketers in identifying problem areas for potential ad deception.

Overall, Carlson et al. (1993) identified the types and frequencies of environmental claims as well as the subsequent deceptiveness of their sample of advertisements. From their research, it appears that a substantial number of environmental claims intend to mislead and perhaps deceive consumers. However, Carlson et al. (1993) did not address the critical issue of the effects of misleading environmental ad claims. The present study, in part, extends this research topic by investigating consumer perceptions of misleading advertising claims. In order to objectively test the hypotheses, an ad that was already determined to be misleading/deceptive by Carlson et al. (1993) was used in this study.

## HYPOTHESES AND MODEL

The chief variables investigated in this study were: (1) concern for the environment, (2) perceived deception, (3) corporate credibility, (4) attitude toward the ad, (5) attitude toward the brand, and (6) purchase intention. The individual hypothesized relationships among these variables were derived from previous research and theory. The hypothesized model is a version of the general model of the effects of attitude toward the ad developed by Shimp (1981), Lutz (1985), and Mackenzie and Lutz (1989).

Based on a 1989 J. Walter Thompson Co. Greenwatch Survey, Levin (1990) found that 79% of consumers surveyed

considered themselves "strong environmentalists." These environmentally concerned consumers have a high awareness of brand/product claims and company environmental actions. This group, with the highest level of environmental concern, has "little confidence" in "green" advertising claims (Dagnoli 1990; Shrum, McCarty, and Lowrey 1995). With higher levels of environmental concern, these consumers tend to be more active in ecological causes and are more likely to boycott products/brands that have "poor" environmental records (Weigel and Weigel 1978). Hence, it follows that the higher the level of environmental concern, the better able to identify misleading and/or false environmental claims. Thus, it is hypothesized:

**H1:** The greater the environmental concern, the more likely deception is perceived.

Advertiser credibility is the perceived believability and honesty of the corporation sponsoring the advertisement. When consumers believe they are intentionally misled, or lied to, by an advertisement, their perceived credibility of the sponsor will diminish. The consumer boycott of Mobil because of the "false" claim of "degradability" of their garbage bags shows how a corporation's credibility can be tarnished (Lawrence 1991). Thus, it is hypothesized:

**H2a:** Perceived deception will have a significant negative effect on a sponsoring corporation's credibility.

No research has been done on the influence of perceived deception in advertisements on attitude toward the ad and attitude toward the brand. However, it would seem reasonable in light of past research on attitude toward the ad (Lutz 1985) to assume that if a consumer perceives that a company is making a product claim that is false or misleading, negative feelings will result and have adverse effects on consumer attitude toward the ad and attitude toward the brand portrayed in the ad. Thus, it is hypothesized that:

**H2b:** Perceived deception will have a significant negative effect on attitude toward the ad.

**H2c:** Perceived deception will have a significant negative effect on attitude toward the brand.

The legal suit against Mobil Chemical Company for deceptive advertising caused many consumers to boycott Glad Trash Bags and other Mobil products (Chase 1991). Thus, it would be reasonable to assume that if companies make deceptive claims consumers would respond by developing negative intent to purchase their brands (McGrath 1992).

Therefore, it is hypothesized:

**H2d:** Perceived deception will have a significant negative effect on purchase intentions.

Based on the findings of Mackenzie and Lutz (1989), it is suggested that perceptions about corporate credibility will have a significant effect on attitude toward the brand. Woodside and Wilson (1985) also propose that if a company induces more favorable perceptions toward itself, this will increase the amount of favorable attitudes toward their brand. Thus, it is hypothesized that:

**H3:** Perceived advertiser credibility will have a significant positive effect on attitude toward the brand.

Many studies have focused on the effects of attitude toward the ad on attitude toward the brand and have found a significant positive relationship between these two constructs (Mackenzie and Lutz 1989; Muehling and Laczniak 1988). Thus, it is hypothesized:

**H4:** Attitude toward the ad will have a significant positive effect on attitude toward the brand.

Many recent studies have indicated a positive relationship between attitude toward the brand and purchase intentions (Batra and Ray 1986; Machleit and Wilson 1988; Yi 1990). Additionally, the consumer survey noted by Chase (1991) indicates that an anti-ad bias by consumers developed from deceptive advertising had an adverse effect on subsequent purchase intentions toward these products. Thus, it is hypothesized:

**H5:** Attitude toward the brand will have a significant positive effect on purchase intentions.

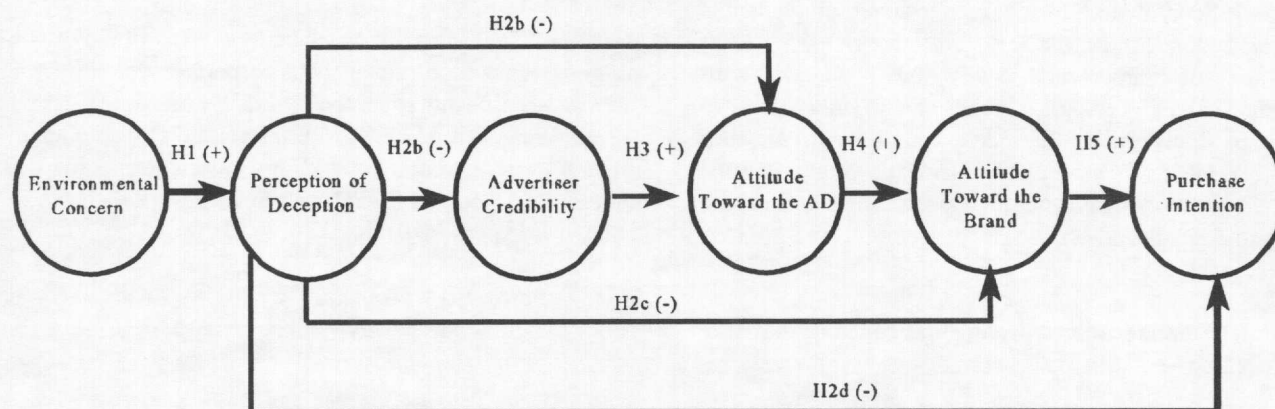
A model encompassing the six constructs and their hypothesized relationships was developed. The theorized model incorporating the previous hypotheses is presented in Figure 1.

## METHOD

### Ad Selected for Study

In preparation for this research, we contacted Carlson et al. (1993) in order to acquire a list of the specific deceptive advertisements reviewed and classified in their research. The selection of a false/misleading ad was based on the criteria that the product was one that the sample population would

**FIGURE 1  
MODEL**



normally purchase or be exposed to and that the false/misleading ad could be manipulated to remove the false claim from the ad and replace it with a neutral claim (Russo, Metcalf, and Stephens 1981). An ad that was reported by Carlson et al. (1993) to be misleading was selected for this study and was shown to half of the sample, and a revised, non-misleading version of the same ad was presented to the other half of the sample.

The ad used for the study was for *General Electric Energy Choice Light Bulbs* featured in *USA Today*, April 12, 1990, that was classified by Carlson et al. (1993) as having one false environmental product claim. The false product claim in the ad stated: "We have an idea that could help save more than 1 million barrels of oil, 3 million tons of coal and help reduce pollution . . . (and cut your electric bill) . . . If we would all use Energy Choice light bulbs." In addition to the claim, the ad included a fifty-cent coupon.

To study the effects of this false environmental claim on consumers, the misleading ad needed to be compared to the same ad manipulated in a manner that eliminated the false claim (Barbour and Gardner 1982). This original ad was deemed "correctable" based on general guidelines put forth by Russo et al. (1981). The false claim in the original ad was replaced with a neutral product claim using the same font style and size: "Save on GE Energy Choice light bulbs . . . In addition to saving energy and cutting your electric bill, you can save 50 cents on your next purchase."

### Procedure

Subjects were told they were participating in a study to measure perceptions concerning attributes of a product in a particular print advertisement. The subjects were then given surveys that contained a black and white copy of either the false environmental claim (AD1) or the manipulated-neutral claim (AD2). The surveys that were distributed contained one of the two ad manipulations and were given randomly to the respondents so each person had an equal chance of receiving either ad. The subjects were asked to read the ad "as if they were seeing it in a magazine" (Yi 1990). After the subjects looked at the ad they were asked to respond to the questions contained in the accompanying questionnaire. It was emphasized that there were no right or wrong answers and that they should answer honestly.

### Sample

Two hundred twenty-five subjects were asked to participate in this study. The sample population consisted of undergraduate students from a medium-size university located in the Midwest. A total of 203 usable surveys were obtained, of which 102 were exposed to AD1 (the misleading ad) and 101 were exposed to AD2 (the non-misleading ad). Final sample size for each group falls within sample guidelines for LISREL (Hair, Anderson, Tatham, and Black 1992)

## Questionnaire

The questionnaire used to gather data about consumer perceptions of the ads consisted of forty-one questions in seven sections. Section A contained questions concerning ad credibility, attitude toward the ad, and perceived deception. Section B assessed attitudes about the brand in the ad. Section C asked for subsequent purchase intentions of the product. Section D contained questions concerning perceptions of corporate credibility. Section E asked about purchase behavior and purchase frequency of the product category. Section F consisted of questions used to measure degree of environmental concern. The last section contained four demographic questions and a question about the purpose of the survey.

## Analysis

Structural equation modeling, t-tests, and correlations were used to analyze the data. Structural equation modeling (SEM) is a multivariate technique used to estimate multiple and interrelated dependence relationships. This is a powerful

statistical tool that combines aspects of multiple regression and factor analysis. SPSS LISREL7 was used to test the eight hypothesized relationships and the overall fit of the data to the model. According to Sorbom and Joreskog (1982): "The structural equation model is used to specify the phenomenon under study in terms of tentative cause and effect variables and various causal effects." SEM seems an appropriate means to test the proposed model because one can test individual relationships while providing an overall statistical measure of the fit of the model.

## Measures of the Constructs

The measurement scales of all the constructs used in the model have been well established in the literature (Gotlieb and Sarel 1988; Mackenzie and Lutz 1989; Weigel and Weigel 1978; Yi 1990). Multiple-item scales were used for the following constructs: environmental concern, perceived deception, corporate credibility, attitude toward the ad, attitude toward the brand, and purchase intention (See Table 1 for a summary of the scales).

TABLE 1  
MEASURES USED IN STUDY

<u>Construct</u>	<u>Study</u>	<u># of Items</u>	<u>Alpha</u>	<u>Est. Error</u>	<u>Items/Categories</u>
Environmental Concern (ENVCON)	Weigel & Weigel (1978)	16	.86	.0373	pollution, conservation, power plants, population; seven positive & nine negative statements
Perceived Deception (PERDEC)	Maddox (1982)	3	.92	.0395	accurate, truthful, and factual
Corporate Credibility (CRED)	Mackenzie & Lutz (1989)	3	.71	.1584	believable, biased, and convincing
Attitude Toward the Ad (ATTAD)	Mackenzie & Lutz (1989)	3	.80	.1034	pleasant, favorable, and good
Attitude Toward the Brand (ABRAND)	Muehling & Laczniak (1988)	3	.90	.0508	pleasant, good, and favorable
Purchase Intention (PURCH)	Gotlieb and Sarel (1988); Yi (1990)	3	.91	.0464	probable, likely, and possible

**Environmental Concern:** Many studies have been conducted to measure the ecological concern of consumers (Ellen, Wiener, and Cobb-Walgreen 1991; Leigh et al. 1988; Synodinos 1990; Weigel and Weigel 1978) and their subsequent purchase intentions of environmentally sound products (Freeman 1989; Miller 1990; Rice 1990). There have been numerous environmental concern scales that have been developed each with various advantages and disadvantages, however, owing to its sound psychometric properties and relatively small number of items, the Weigel and Weigel (1978) Environmental Behavior Index (EBI) was chosen for use in the present study. The EBI purports to measure both general and specific environmental concerns including: (1) pollution, (2) conservation, (3) power plants, and (4) population. The EBI contains seven positive and nine negative statements using a five-point Likert response format. Each scale item is classified as one of the following: (1) belief, (2) evaluation, or (3) behavioral intention. Responses were summed to measure environmental concern where higher scores indicate greater concern.

**Perceived Deception:** Using the perception of an advertisement as the basis, deception is defined as follows:

Conceptually, deception is found when an advertisement is input into the perceptual processes of some audience and the output of that process (a) differs from the reality of the situation and (b) affects buying behavior to the detriment of the consumer (Aaker 1974, p. 138).

Perceived deception is based on whether the consumer can identify an ad that contains a claim that has been classified as misleading, deceptive, or distorted (Maddox 1982). A three-item, seven-point, bi-polar adjective scale was used to measure perceived deception. The items are accurate/misleading, truthful/deceptive, and factual/distorted (Maddox 1982). Responses to these items were summed to form a single measure of perceived deception where higher scores indicate greater levels of perceived deception in the ad.

**Other Measures:** The other measures used in the study include: Advertiser Credibility (Mackenzie and Lutz 1989); Attitude Toward the Ad (Lutz 1985; Mackenzie and Lutz 1989); Attitude Toward the Brand (Ajzen and Fishbein 1980; Brown and Stayman 1992; Muehling and Laczniak 1988); and Purchase Intention (Gotlieb and Sarel 1988; Lutz, Mackenzie and Belch 1983; Yi 1990). For each of these scales, the responses were summed to form single measures of each of the constructs.

## Product Relevancy

Ninety-six percent of subjects reported that they had previously purchased light bulbs. In addition, subjects had a mean score of 3.65 when asked how frequently they purchased light bulbs, using a seven-point Likert scale using (1) "never" to (7) "frequently."

## Scale Psychometrics

In assessing the internal consistency of the scale items, SPSS was utilized to compute reliability coefficients for each construct. All of the scales used to measure the constructs had adequate internal consistency as specified by Nunnally (1978) and Peterson (1994). Reliability coefficients, or alphas, for each construct are as follows: environmental concern,  $\alpha = .86$ ; perceived deception,  $\alpha = .92$ ; corporate credibility,  $\alpha = .71$ ; attitude toward the ad,  $\alpha = .80$ ; attitude toward the brand,  $\alpha = .90$ ; purchase intention,  $\alpha = .91$ .

## T-tests

Two-tailed t-tests were run to determine if there were any significant differences between sample group 1 (AD1, the misleading ad) and sample group 2 (AD2, the non-misleading ad). The results showed that, as hypothesized, students who read the misleading ad reported higher perceived deception and lower corporate credibility (see Table 2). There were, however, no other statistically significant mean differences between the two groups.

## Correlations

Table 3 presents correlation coefficients among the six variables in the study. These provide initial tests for the hypotheses. Note that all but the first hypothesis are supported (environmental concern does not appear to be associated with any of the variables in the study) and that the direction and size of the correlations are similar regardless of whether subjects saw the deceptive ad or the non-deceptive ad. Because the correlation coefficients were so similar in size, we combined the data from the two groups, and the covariance matrix for the entire sample served as input to the SEM program.

## Estimating Error in the Constructs

In the proposed model the constructs are denoted by single indicators and determined by the summed scores on each scale. The advantages of using this technique according to Mackenzie and Lutz (1989, p. 58) are:

**Table 2**  
T-tests for Differences Between Group 1 (AD1) and Group 2 (AD2)

Construct	Mean Scores		t-value	d.f.	2-tailed prob
	AD1	AD2			
Environmental Concern	58.77	61.02	-1.74	201	.083
Perceived Deception	11.49	9.89	3.30	201	.001
Advertiser Credibility	13.42	14.72	-2.96	201	.003
Attitude Toward the Ad	15.53	15.17	.82	201	.413
Attitude Toward the Brand	16.16	16.05	.26	201	.793
Purchase Intention	14.85	15.60	-1.44	201	.151

AD1 = Deceptive Ad  
AD2 = Nondeceptive Ad

**Table 3**  
Correlations Among Variables in the Study

	ENVCON	PERDEC	CRED	ATTAD	ABRAND	PURCH
ENVCON		.0786	-.0728	.0756	.0895	.1323
PERDEC	.2010*		-.5064**	-.3824**	-.3822**	-.2843**
CRED	-.1744	-.4883**		.3568**	.3950**	.1375
ATTAD	-.0809	-.4541**	.3726**		.6851**	.4697**
ABRAND	-.0945	-.4344**	.4679**	.4910**		.5254**
PURCH	-.0949	-.3429**	.4093**	.2181*	.3846**	

\* p < .05 \*\* p < .05

AD1 (misleading ad) correlations in upper triangle

AD2 (non-misleading ad) correlations in lower triangle



- (1) it improves the distributional properties of the latent construct indicators,
- (2) it prevents changes from affecting the empirical definitions of the constructs (i.e., it prevents interpretational confounding from being a problem), and
- (3) it simplifies the analysis and the reporting of the results.

Unlike some other studies using structural equation analysis where the measurement error of the constructs is assumed to be zero, the measurement errors for the constructs in this study were estimated using the following equation: 1 minus the square root of the alpha coefficient that represents the reliability of each scale (Jaworski and MacInnis 1989). Since the constructs were known to include a degree of unreliability, the research used this procedure. Thus, constraining the reliabilities of the constructs to be equal to the reliabilities of their measurement scales gives a more realistic error estimate for the construct (Mackenzie and Lutz 1989). See Table 1 for the error estimates.

### Hypothesis Testing

SPSS LISREL7 (See Figure 1) was used to perform structural equation analysis, which tested the hypothesized relationships and the overall fit of the model for the sample. No identification problems for the data were found during the analysis. Results of the tests of the eight hypotheses using LISREL are discussed below.

Hypothesis 1 states that the level of consumer environmental concern will lead to an increase in perceived deception. This hypothesis is not supported. The t-value was 1.453 ( $p > .05$ ).

Hypothesis 2a posits that perceived deception will have a significant negative effect on advertiser credibility. This hypothesis is supported. The t-value was -8.709 ( $p < .05$ ). The path was significant and in the hypothesized direction.

Hypothesis 2b states that the perceived deception will have a significant negative effect on attitude toward the ad. This hypothesis is supported. The t-value was -3.039 ( $p < .05$ ). The path was significant and in the hypothesized direction.

Hypothesis 2c states that perceived deception will have a significant negative effect on attitude toward the brand. The results strongly support the hypothesis. The t-value was -3.112 ( $p < .05$ ). The path was significant and in the direction of the hypothesis.

Hypothesis 2d states that perceived deception will have a significant negative effect on purchase intentions. Again, the

hypothesis is supported. The t-value was -2.388 ( $p < .05$ ). The path was significant and in the direction hypothesized.

Hypothesis 3 states that perceived advertiser credibility will have a significant positive effect on attitude toward the ad. This hypothesis is supported. The t-value was 2.481 ( $p < .05$ ). The path was significant and in the hypothesized direction.

Hypothesis 4 states that attitude toward the ad will have a significant positive effect on attitude toward the brand. This hypothesis is supported. The t-value was 7.792 ( $p < .05$ ). The path was significant and in the hypothesized direction.

Last, hypothesis 5 states that attitude toward the brand will have a significant positive effect on purchase intentions. Once again, this hypothesis is supported. The t-value was 5.812 ( $p < .05$ ). The path was significant and in the hypothesized direction.

### Model Fit Estimates

The proposed model representing the hypothesized relations did fit extremely well. With 7 degrees of freedom, the model had a chi-square of 10.93 with a  $p$ -value of 0.142, a GFI of 0.983, an AGFI of 0.949, and the RMSR was .039. This indicates an excellent model fit. As outlined previously, the structural equation analysis indicated that the path between environmental concern (ENVCON) and perceived deception (PERDEC) was not significant. Hayduk (1987) recommends that a model should not be re-specified based on a nonsignificant relationship. Thus, no alteration of the model was made based on this finding.

### DISCUSSION AND MANAGERIAL IMPLICATIONS

The findings of this study reveal several important features of consumer reaction to deceptive environmental advertising. First, it appears that the level of environmental concern expressed by consumers has little effect on the degree of deception they perceive in an advertisement (Hypothesis 1), whether the ad is *objectively* misleading or not. It may be that concern for the environment is not sufficient to equip consumers to detect misleading ad claims. Perhaps knowledge of environmental issues is a better indicator of the ability to perceive deception. This is suggested by consumers themselves (Dagnoli 1990) when they request additional information to help them evaluate green ad claims. Advertisers need to better educate consumers, in their ads and through other means, so they can make more informed decisions when assessing the environmental attributes and/or benefits of their products and services.

Second, it is clear that when an ad is perceived environmentally misleading, consumers also perceive lower advertiser credibility, express negative attitudes toward the ad and toward the brand, and develop lower purchase intentions for the brand. This was apparent, again, regardless of whether the ad was objectively misleading or not. Thus, the warnings frequently encountered in the business press (e.g., Davis 1992; Silver 1992) about the potentially damaging effects of using "deceptive" environmental claims, the ethical and legal questions notwithstanding, have some empirical support. When consumers perceive that ads are misleading and make fraudulent claims, they react negatively to the ads and to the advertised brands (Chase 1991). In this regard, the present study extends Carlson et al.'s (1993) research by showing some of the effects specific misleading ads may have on consumers. Marketing and advertising managers must be careful when making environmental claims in their advertising, since any perception of deception on the part of consumers may result in negative attitudes toward the ad, the brand, and the advertiser. Careful development and pretesting of environmentally focused ads seems warranted to prevent any misperception of such claims.

Third, the findings have a rather troubling feature. One would expect consumers to react negatively to perceived deceptions in ads, lowering attitudes toward the advertised brand and intentions to purchase. However, examination of the t-test results in Table 2 show that attitudes toward the ad and the brand and purchase intention (although slightly lower) were not statistically different between subjects who saw the deceptive ad and those who saw the non-deceptive ad. On the positive side, this suggests that deceptive environmental claims may be of little value in persuading consumers to buy; however, from a negative point of view, the deceptive ad was virtually as effective in influencing mean attitudes and purchase intentions as the non-deceptive ad. The t-tests and correlations (model) taken together suggest that deceptive ads may "backfire" on the sponsor leading to negative consumer reaction, *but only if consumers perceive a deception*. Otherwise the ads appear to be no more or no less favorable than non-deceptive ads. Whether consumers can easily perceive deception or not should not be relevant to ethical marketing managers. There is both an ethical and legal responsibility to present information that is truthful and not misleading. However, this finding may indicate the need for increased monitoring of environmental advertising by government agencies and consumer groups.

Overall, the results seem to indicate that level of environmental concern does not assist consumers in identifying misleading "green" advertising, but consumers perceived deception does have a negative effect on advertiser credibility, attitudes toward the ad, attitudes toward the

brand, and purchase intent. Hypothesized relationships between other ad related constructs were also supported. This confirms findings of past research conducted on these constructs. In short, attempts to deceive consumers with misleading environmental advertising would be to a corporation's detriment. Not only would consumer attitudes toward the ad, the brand, and the advertiser be negatively affected, but the corporation may be guilty of violating ethical and legal guidelines.

Corporations who are considering using environmental claims in their ads should adhere to a few basic guidelines. First, companies must make sure that the environmental benefit they plan to promote is important to consumers. If this benefit is not salient to those consumers who are targeted, it should not be part of the promotion. In addition, companies need to be specific about any environmental claims that they make in their promotions and provide supporting evidence when appropriate. This policy will help to eliminate perceptions of deception by consumers, environmental organizations, and government agencies who may be inclined to investigate the validity of suspect environmental claims. Finally, companies need to have a corporate environmental strategy for their products and promotions. By implementing a company-wide environmental mission statement, consistency and focus of promotional materials can be more easily accomplished simply because these policies are part of formal corporate objectives.

## LIMITATIONS

The present study has both strengths and limitations. Using a "real" ad that was objectively judged to be misleading by independent researchers relieves doubts about the authenticity and content of the ad stimulus. Using both the misleading version of the ad and its non-misleading equivalent together ensure that the subjects were responding to real variation in deception with all other elements of the ads controlled, which a sole ad could not provide. Moreover, using two versions of the ad permitted comparison between subjects who viewed objectively misleading information with those who viewed non-misleading information, so that effects of ad claims could be explicitly evaluated. Testing hypotheses within the context of a larger model of advertising effects (Mackenzie and Lutz 1989) places them within a theoretically and empirically valid nomological network of constructs that lend support to the validity of the findings.

This study investigated the effects of misleading and/or deceptive claims from print advertisements only. It may not

be feasible to generalize the research findings to other advertising media such as television. Additionally, the sample was limited to undergraduate college students, which may not reflect the perceptions of the rest of the adult population. Finally, the stimulus ad used was for a single product/brand, therefore generalizations to ads for other products should be made very cautiously

## CONCLUSIONS

With the rise in consumer demand for "eco-sound" products, marketers should try to avoid potential legal and ethical problems that can occur when making false or deceptive environmental product claims. They may have to change the procedures by which they currently develop and promote green products. It is necessary for a company to develop an

appropriate corporate plan and outlook for their green products that avoid deception. Deceptive ad claims may have little positive influence on consumers and they have the potential to lead to negative consequences. Where consumers perceive intent to deceive they may react with negative attitudes and purchase intentions. A company leaves itself open to lawsuits by competitors or government agencies. Long run corporate credibility may be damaged, harming the brand's equity. Consequently, marketers need to be aware of the potential negative ramifications of using misleading environmental claims. Additionally, they need to keep up-to-date with any changes in government regulations and guidelines that may further affect future advertising practices. Through these efforts, marketers will be better able to develop more appropriate and effective environmentally-related advertisements.

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