

EVIDENCE USAGE IN PERSUASION

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CHAPTER ONE
RESEARCH PROBLEM AND SURVEY OF LITERATURE

Researchers in the area of persuasion have tried both to understand and predict the responses of people to persuasive messages. In attempts by researchers to analyze the process of persuasion various components have been isolated and examined. These components involve source variables, such as source credibility and presentation styles; receiver characteristics, including such factors as audience attitudes and personality attributes; message variables, involving factors such as the order of presentation of arguments and the nature of supporting materials; and situational factors, such as the audience's chance to respond or need to make immediate choices. This sampling of inputs offers a broad range of variables to choose from when examining the process of persuasion.

Many guidelines for the would-be persuader have been advocated in a variety of public speaking and argumentation texts. The suggestions offered in these guidelines are often supported by empirical research, but at times they are not. One variable that falls in the latter category is that of evidence employed in persuasive messages.

Robert Cathcart conducted a survey of guidelines concerning the use of evidence in persuasion and reported the following conclusions:

". . . in general, there is agreement on the following points: (1) evidence is the basis from which logical argument is developed, (2) usually, the broader this basis, i.e., the more evidence presented, the more likely it is that proof will be generated, (3) evidence which has been evaluated by the so-called 'tests of evidence' is more

likely to be valid, and (4) evidence which has been carefully documented is generally more acceptable than undocumented evidence."¹

A broad range of current public speaking and persuasion texts discussing how to create effective persuasive messages have included similar admonitions about the need for evidence in persuasion.²

This position stressing the importance of evidence to effective persuasive messages appears intuitively valid. It makes sense to think that rational beings would be influenced more by the use of strong evidence. Unfortunately, these claims about the importance of evidence seem to have little empirical support from persuasion research, since relatively little research has been conducted centering on evidence, and what has been conducted has yielded contradictory results. Thus, the role of evidence in persuasion is an area that requires further examination.

¹Robert S. Cathcart, "An Experimental Study of the Relative Effectiveness of Four Methods of Presenting Evidence," Speech Monographs, 22 (August, 1955), p. 227-233.

²See for example: Alan H. Monroe and Douglas Ehninger, eds. Principles of Speech Communication, 7th brief ed. (Glenview, Ill.: Scott, Foresman, and Co., 1975).

Wayne C. Minnick, Public Speaking (Boston: Houghton-Mifflin Co., 1979).

James R. Andrews, Essentials of Public Communication (New York: John Wiley and Sons, 1979).

Otis M. Walter, Speaking to Inform and Persuade (New York: Macmillan Publishing Co., Inc. 1982).

Joseph Ilardo, Speaking Persuasively (New York: Macmillan Publishing Co., Inc., 1981).

Definition of Evidence

The initial problem to be faced in examining the role of evidence in persuasion is a definition of the term "evidence." Past research has not defined the term consistently, and that is part of the problem involved in comparing results of different studies. Thomas Harte defined evidence as "statements of fact and of opinion offered in support of a speaker's claim."³ Harte's definition places unnecessary limitations on the concept of evidence. Very often objects and/or actions are offered in support of claims, and they operate as effectively as statements. For example, a speaker could argue that Corvettes are beautiful cars, and offer a picture of one as evidence. A speaker could claim that a political candidate was upset, and point to him crying as evidence of the original claim. These examples illustrate a form of evidence that goes beyond the artificial limitations that inclusion of statements alone creates.

James C. McCroskey broadened the definition by considering evidence to be "Factual statements originating from a source other than the speaker, objects not created by the speaker, and opinions of persons other than the speaker that are offered in support of the speaker's claim."⁴ His description of evidence broadens the concept in one sense by including objects and statements. It limits the definition in

³Thomas B. Harte, "Audience Ability to Apply Tests of Evidence," Journal of the American Forensic Association, 8 (Fall, 1979), p. 109-15.

⁴James C. McCroskey, "Summary of Experimental Research on the Effects of Evidence in Persuasive Communication," Quarterly Journal of Speech, 55 (April, 1969), p. 169-176.

another very important sense by allowing only material external to the speaker to be classified as evidence. This limitation would exclude personal beliefs and personal testimony from the realm of evidence. It would seem that personal testimony from a speaker would have the same function in the persuasive effects of a message as it would if that same information was presented as originating from a source other than the speaker. It does not seem that claiming a device works because the speaker has tried it and found it successful operates much differently from the same claim being attributed to the speaker's neighbor. Here, the source of the evidence may be evaluated differently in the two instances, but they both serve the same evidential function. Since both types of evidence are being offered in support of the same claim, it seems relevant to discuss differences between the types, but artificial to argue that one operates as evidence and the other does not.

Gerald Miller offered a third option. "Evidence consists of those data that are intended to induce a sense of belief in the proposition which the data purportedly support."⁵ Miller's definition includes the various forms evidence can take (eliminating none), and he does not limit it to data from a source other than the speaker. Some might argue that definitions which remove the requirement for the support material to be from a source other than the speaker (as this one does) are unreasonably broad.⁶ Indeed, this view makes it almost impossible to

⁵Victor D. Wall, Jr., "Evidential Attitudes and Attitude Change," Western Speech, 36 (Spring, 1972), p. 115-123.

⁶See for example Kathy Kellerman, "The Concept of Evidence: A Critical Review," Journal of the American Forensic Association, 16 (Winter, 1980), p. 159-172.

imagine a message with absolutely no evidence. This factor, however, need not be a reason to reject Miller's definition and others equally broad, but it is a reason to examine past approaches to evaluating evidence. It may be that trying to compare messages that include evidence to those with no evidence is a less meaningful task--especially when the no evidence condition contains all the same information except the source of it. According to the broader definition, what is really occurring in those situations is a comparison of types of evidence. Miller's definition appears to reflect what is really occurring better than the others. Because it seems to be more meaningful, it will be the definition employed in this study. This definition implies that we should examine alternative criteria for meaningful explanations of the ways that evidence operates in messages. Some possibilities include the form of evidence employed, the strength of the evidence, and/or its relevance to the claim. These dimensions will be examined in greater depth later.

Past Research

Research conducted on evidence and its effects in persuasion has entailed a variety of directions and applications, used differing definitions of evidence, and employed a broad spectrum of methodologies. Before a discussion of the proper approach to studying evidence's role in persuasion, it is necessary to examine past research that has focused on a variety of factors attempting to explain evidence's role in persuasion. Those factors include evidence and source credibility; the credibility of the evidence itself; how evidence's persuasive effect is

affected by delivery; how prior knowledge of evidence affects persuasion; the relationship between evidence and sustained attitude change; how varying types of evidence affect persuasion; how receiver characteristics affect the persuasive effects of evidence; and cross-cultural applications of evidence. An examination of these factors can provide a clearer understanding of the ways that evidence operates in persuasion. It can illuminate directions for further research as well as methodological factors that must be taken into consideration. This section will examine the past research and after the examination, some general conclusions will be drawn about the relevance of this research, and suggestions for the orientation or direction of further research will be discussed.

Evidence and Source Credibility

One of the first areas to examine is the relationship between evidence and source credibility. The overall conclusion of the studies examining this relationship in particular is that inclusion of evidence could help low credible sources, but would not affect high credible sources. It has been hypothesized that this pattern may be due to a ceiling on the level of credibility that can be achieved. One of the most often cited studies in this area was conducted by McCroskey. Using the definition of evidence attributed to him above, McCroskey carried out several studies in 1966.⁷ In one study he used college students with an unknown experimenter, and in the second he had high school students with their "known and respected" teachers present. The first

⁷McCroskey, p. 169-176.

study showed that evidence enhanced the persuasive effect of low credibility sources, but did not affect high credible sources. The second study showed no effects at all. McCroskey suggested the credibility of the experimenter could have confounded the results. Support for this type of confounding effect was reported in a separate study by Paul Holtzman in 1966.⁸ Similarly, Gary Mills conducted another study on the issue of experimenters' confounding of credibility in 1977.⁹ He manipulated speaker credibility, the credibility of the source of the evidence, and sponsorship (researcher) credibility, and found that sponsorship credibility played the major role in determining the subject's response. This study focused on an examination of credibility, however, rather than the impact evidence itself had on the persuasive effect of the message.

Irving Warren reported another study in 1969 focusing on the interaction between evidence and credibility.¹⁰ He also failed to define evidence, and only the source of the support material was varied in his study. Warren's study did not produce a statistically significant difference, but the direction of the results favored McCroskey's

⁸Paul Holtzman, "Confirmation of Ethos as a Confounding Element in Communication Research," Speech Monographs, 33 (November, 1966), p. 464-466.

⁹Gary G. Mills, Relationships Among Three Sources of Credibility in the Communication Configuration: Speaker, Message, and Experimenter," Southern Speech Communication Journal, 42 (Summer, 1977), p. 334-351.

¹⁰Irving D. Warren, "The Effect of Credibility in Sources of Testimony on Audience Attitudes Toward Speaker and Message," Speech Monographs, 36 (November, 1969), p. 456-458.

conclusion. Low credible sources tended to be enhanced by the presence of evidence, but there was no effect on high credible sources. The methodology, again, could have presented problems. The subjects were given a pretest, listened to the speech, and then completed a posttest immediately. The posttest included the same scales as the pretest. The questionnaire included items on the topic, the speaker, and the sources of the evidence. The questionnaire could have sensitized the subjects to the research hypothesis, and they could have been sensitized by having the same test immediately before and after the speech.

Another study in this area was conducted in 1975 by Helen Fleshler, Joseph Ilardo, and Joan Demaretsky.¹¹ They did not rely on a specific definition of evidence, however, and they manipulated only the documentation of the evidence they used. All evidence was external to the speaker and was specifically documented (with a name and qualifications) or generally documented (as in "a study was conducted"). This study concluded that low credible sources were aided by specific evidence documentation, but so were high credible sources. Fleshler, Ilardo, and Demaretsky measured credibility after the message, but acceptance of the message itself (its persuasive effect) was not measured. It should be noted that the methodology of the study could have been responsible for these results. The questionnaire given to the subjects had eight questions: four of them questioned the amount and quality of evidence in

¹¹Helen Fleshler, Joseph Ilardo, and Joan Demoretsky, "The Influence of Field Dependence, Speaker Credibility, Situation, and Message Documentation on Evaluations of Speaker and Message Credibility," Southern Speech Communication Journal, 39 (Summer, 1974), p. 389-402.

the message; the other four measured the speaker's credibility. It is possible that the questions about evidence usage sensitized the subjects for the credibility questions since they appeared first.

In light of all the methodological questions raised, it is not possible to conclude that we know how evidence affects source credibility in any absolute terms, and the lack of consistent results further hinders a clear perspective. It does seem we can tentatively conclude that evidence inclusion probably does aid low credible sources since two of the four studies found significant support for that, a third study showed a trend in that direction, and the fourth study had an explanation for the lack of results. There does not seem to be a basis to conclude more than that.

Credibility of Evidence

A few studies focused specifically on the effects of the credibility of evidence. They examined the effect of biases of authorities on the perceived credibility of their testimony. The predominant conclusion of this research is that biased sources are less credible than unbiased ones and reluctant testimony. For example, William Arnold and James C. McCroskey conducted a study in which a specific definition of evidence was not presented, but the forms they used were all testimony external to the speaker.¹² There is a possibility that other factors in the study could account for the conclusion of biased sources

¹²William E. Arnold and James C. McCroskey, "The Credibility of Reluctant Testimony," Central States Speech Journal, 18 (May, 1967), p. 97-103.

appearing less credible than unbiased ones or reluctant testimony. The biased and reluctant sources employed in the study were labor leaders and management leaders while the unbiased source was an economics professor. Since their subjects were drawn from a college population, it is quite possible that the subjects merely found a professor to be a more credible source than someone in the business world without regard to the biased or unbiased nature of the testimony.

In 1970, Loren Anderson noted these problems and decided to replicate Arnold and McCroskey's study.¹³ He manipulated sources to generate high, moderate, and low credibility, and created biased evidence and reluctant testimony for each source credibility level. He measured subjects' responses on three scales: authority, character, and objectivity. The results reported were all in the direction of Arnold and McCroskey's study, but only three of the results were statistically significant (high and moderate objectivity, and moderate character). Unfortunately, Anderson's study was not a complete replication. It only dealt with biased and reluctant authorities, while a major question from Arnold and McCroskey's study centered on deciding which was most credible: unbiased or reluctant testimony. This provides support for biased evidence being less credible than reluctant testimony, but there is still a reason to view the conclusions about unbiased testimony to be more tentative.

¹³ Loren Anderson, "An Experimental Study of Reluctant and Biased Authority-Based Assertions," Journal of the American Forensic Association, 7 (Spring, 1970), p. 79-84.

Evidence and Delivery

Another variable was added to the examination of evidence by Arnold and McCroskey and reported in 1969.¹⁴ They found the greatest attitude change and highest credibility were produced in a speech with both evidence (by McCroskey's definition) and good delivery. They followed up the initial study with a second one manipulating evidence inclusion, delivery, initial credibility, and media of transmission.¹⁵ In this study, inclusion of evidence increased attitude change only when presented with good delivery by an initially low credible source. There was no effect found for the media of transmission, and the details of the studies' methodologies were not presented for analysis.

Evidence and Prior Knowledge

McCroskey investigated yet another aspect of the effects of evidence in persuasive messages--the relationship between evidence and prior knowledge on the topic.¹⁶ He again relied on his own definition of evidence and hypothesized that the evidence would have to be new to the audience to have an effect. He argued that this was consistent with dissonance theory in that old material would have already been processed and only new material would have any potential for attitude change. His study confirmed the hypothesis, but again, few details of the methodology were reported that would allow analysis of the study.

¹⁴McCroskey, p. 173.

¹⁵Ibid., p. 173-174.

¹⁶Ibid., p. 174-175.

Victor Wall, in 1972, also examined the relationship of evidence and prior knowledge on a topic from a slightly different focus. His study used Gerald Miller's definition of evidence: ". . . those data that are intended to induce a sense of belief in the proposition which the data purportedly support."¹⁷ The first study hypothesized that attitudes toward the evidence used in a persuasive message were related to attitudes toward the central theme of the message.¹⁸ The hypothesis was subsequently supported by two of the three messages. The second study attempted to test the hypothesis that linking an argument to existing favorable attitudes of the listener would produce more attitude change than not linking the argument.¹⁹ No statistically significant results were found, although the results were in the predicted direction.

Evidence and Sustained Attitude Change

Another area of study is the relationship between evidence usage and sustained attitude change. In his summary of experimental research dealing with evidence use, McCroskey reported that five studies (unspecified) measured long term attitude change, which was defined as up to seven weeks.²⁰ Four of the five studies found that inclusion of evidence enhanced the amount of attitude change measured over time. No details were presented concerning the nature of these studies or the definitions

¹⁷Wall, p. 115.

¹⁸Ibid., p. 116-119.

¹⁹Ibid., p. 119-123.

²⁰McCroskey, p. 175.

of evidence employed, but McCroskey was involved in two other studies related to this area. One of them, in 1970, dealt with the effects of evidence and counter-persuasion.²¹ He found that subjects who had been exposed to evidence (using McCroskey's definition) in the initial message were more resistant to counter-persuasion. The study, however, had a few problems. The entire experiment took place in one session. The subjects were pretested for attitudes, given a credibility introduction for the speaker, heard the first message, posttested with the attitude and credibility scales, given a credibility introduction to the second speaker, pretested with the credibility scales, heard the second message, and again were posttested for attitude change and credibility scores. The repeated testing alone could have sensitized the subjects to the scales; the nature of the scales could have alerted the subjects to the experimenter's purpose; and the immediacy of the second speech could have affected the results.

McCroskey, along with Thomas Young and Michael Scott, reported another study on evidence and sustained attitude change in 1972.²² The definition of evidence employed here was McCroskey's. The evidence condition contained documented material attributed to an external source. The no evidence condition dropped out the documentation and changed

²¹James C. McCroskey, "The Effects of Evidence as an Inhibitor of Counter-Persuasion," Speech Monographs, 37 (August, 1970), p. 188-194.

²²James C. McCroskey, Thomas J. Young, and Michael D. Scott, "The Effects of Message Sidedness and Evidence on Inoculation Against Counter-Persuasion in Small Group Communication," Speech Monographs, 39 (August, 1972), p. 205-212.

specific factual information to generalities (i.e., "56%" became "a majority"). This study was designed to find out if the resistance to counter-persuasion generated from evidence in the initial message would hold true if the counter-persuasion was presented in a small group setting. The results showed that evidence had no significant effect as an inoculation against counter-persuasion in this setting. Thus, the overall research results indicated that the effectiveness of evidence as inoculation against counter-persuasion would seem to be limited to formal speech settings using McCroskey's definition of evidence.

Types of Evidence

Some research has focused on the effects of varying the types of evidence in messages. One of the earliest studies was reported in 1954 by Howard Gilkinson, Stanley Paulson, and Donald Sikkink.²³ The type of evidence employed in their study seemed to fit McCroskey's definition, but this time the no evidence condition was what the researchers referred to as the non-authority condition; it was the same content, but it had the sources deleted. Gilkinson, et .al., predicted that presenting the authority associated with evidence would be more effective in generating attitude change than not doing so. They pretested subjects' attitudes a week before the experiment to find out initial attitudes. The subjects were then divided into three groups. The control group heard no message, but filled out the posttest attitude scales. The

²³Howard Gilkinson, Stanley F. Paulson, and Donald E. Sikkink, "Effects of Order and Authority in an Argumentative Speech," Quarterly Journal of Speech, 11 (April, 1954), p. 183-192.

second group heard the message with arguments supported by quotations from six authorities. The third group heard the same speech with only the names of the authorities and their qualifications removed. Then the two experimental groups took the posttest attitude scale. The results indicated that both speeches generated attitude change, but there was no significant difference between the attitude change generated by the authority and non-authority speeches. These results indicate that identifying the source of evidence makes no difference. This conclusion is contrary to the position taken in argumentation and persuasion texts which have claimed that it is important to identify and qualify the sources used in speeches. This lack of difference in results for messages identifying the source of the evidence and those deleting it also reinforces earlier questions about the validity of McCroskey's definition of evidence.

Robert Cathcart examined the persuasive effect of varying the type of evidence employed in 1955.²⁴ His study varied the amount of evidence used, the documentation of the evidence, and the qualifications of the source. There were four forms of speeches created. One had no evidence (no specific statements) and included generalized statements instead. The second speech included evidence (specifics) but it had no source documentation. The third speech included evidence with the name of the source and the date. The fourth speech involved evidence that was completely documented and included the qualifications of the source. The subjects were pretested and posttested to determine attitude change.

²⁴Cathcart, p. 227-233.

The posttest included background information questions to determine what each individual knew about the subject, public speaking, and evidence. The study concluded that inclusion of specific evidence resulted in significantly more attitude change than generalizations, but documenting the evidence and providing source qualifications made no difference. This held true for people who had past experience with public speaking and evidence issues and for those who had not. Again, this conclusion runs counter to the position advocated by theorists in the field.

A more recent study was reported by John Kline in 1969.²⁵ He varied the type of evidence used (specific evidence, non-specific evidence, and no evidence), the type of message (fact or policy), and the intelligence of the subjects. He relied on McCroskey's definition as his overall definition of evidence; however, he did not cite a source in either of his evidence conditions. The conclusions were that specific factual evidence is more effective than either of the other types of evidence, and that results did not vary for the different types of messages. This study was subject to a few design problems. The subjects were pretested and posttested with the same attitude scale immediately before and after each message. The posttest also asked them to evaluate the trustworthiness and expertness of the author of the message. The subjects could have been sensitized to the attitude scale and somewhat to the experimenter's goals.

Overall, it would seem that it is best to read some evidence, with

²⁵John A. Kline, "Interaction of Evidence and Reader's Intelligence on the Effects of Short Messages," Quarterly Journal of Speech, 55 (December, 1969), p. 407-413.

specific factual evidence best, but it is not necessary to document the source of the evidence. This last claim would again seem to weigh against reliance on a definition of evidence that required it to be from an external source.

Tests of Evidence

Thomas Harte approached the question of evidence in persuasion from a slightly different perspective.²⁶ He was interested in determining if people could apply tests of evidence, with evidence defined as ". . . statements of fact and of opinion offered in support of a speaker's claims."²⁷ A local service organization participated in the study. The subjects were given a two-part questionnaire. The first part asked them to evaluate twelve propositions that appeared in the 1968 Presidential Election Campaign. The subjects reported how familiar they were with the issues, how committed to them they were, and how important they thought the issues were. The second part of the questionnaire asked the subjects to evaluate evidence linked to these propositions. Harte had experts evaluate the evidence according to three tests of evidence: source reliability, internal consistency, and relevancy. The results showed that the group overall could correctly apply the tests of evidence only 51 percent of the time, but those with a college degree were significantly better at it with 57 percent correct. (Applying the test correctly meant that the subject's response agreed with the evaluation of

²⁶Harte, p. 109-115.

²⁷Ibid., p. 111.

the experts.) Thus, those who are at least better formally educated are more successful in identifying good and bad evidence. This study indicates that the level of education of the audience plays some role in their processing of information and evidence, but overall, subjects were not very good at applying those tests of evidence even when their attention was focused directly upon the evidence.

Harte's study also highlighted some other variables that appear to have an effect on the ability to evaluate evidence. Those who were better informed on a topic were better at evaluating the evidence for it. The same holds true for those who had an opinion one way or the other. The importance of the topic had no significant effect. It seems reasonable that those who know something about a topic and have an opinion on it would be in a better position to evaluate the adequacy of evidence. Finally, Harte found that inconsistent evidence was the most difficult type for the subjects to identify. The conclusions were generated by having an audience focus directly on evidence that was not contained in a speech. That is not a typical situation, and it does not deal with the effectiveness of evidence in a persuasive setting.

William Dresser reported a study in 1963 in which he tried to evaluate the effects of satisfactory and unsatisfactory evidence within a speech.²⁸ He administered a pretest to determine attitudes on the topic one week before the experiment. The same scales were used to create the posttest on attitudes. The subjects heard one of four speeches. One

²⁸William R. Dresser, "Effects of 'Satisfactory' and 'Unsatisfactory' Evidence in a Speech of Advocacy," Speech Monographs, 30 (August, 1963), p. 302-306.

speech had evidence rated satisfactory (according to common public speaking texts' criteria), one had evidence attributed to an unreliable source, a third speech had irrelevant evidence, and the fourth one had internally inconsistent evidence. After the speech, there was a class discussion to determine whether or not they identified the types of unsatisfactory evidence. The results showed that there was no difference in attitude change generated by the different types of evidence. The audience was partially successful at recognizing the unreliable sources, but they did not identify the other two problems. Thus, Dresser's study would indicate that the validity of evidence used in a persuasive speech makes no difference on its effectiveness in changing attitudes.

Kline did another study on tests of evidence in 1971.²⁹ He presented 36 subjects with evidence (according to what appears to be McCroskey's definition) that was varied according to trustworthiness, expertness, specificity, and relevance, and asked them to Q-sort it according to how likely they would be to use the evidence in a persuasive speech. His subjects included six Ph.D. candidates in speech and six in science, six high school students, three laborers, six politically active women, six college students, and three law students. This type of sampling cannot be considered to be representative of the population as a whole. He classified them into groups according to the type of evidence they favored. His conclusion was that they all had criteria for evaluating the evidence; they just did not agree on what the criteria

²⁹John A. Kline, "A Q-Analysis of Encoding Behavior in the Selection of Evidence," Speech Monographs, 38 (August, 1971), p. 190-197.

should be. While these results are interesting, further testing with a broader sample would be needed to accept this conclusion as one with general validity.

Thus, the research would suggest that people can have limited success identifying good and bad evidence if their attention is focused on it, but the inclusion of good or bad evidence in a speech makes no difference concerning their acceptance of the message. Kline's study indicates that people may be making their own distinctions that do not agree with those of the "experts" in the field.

Evidence and Receiver Characteristics

A variety of receiver characteristics have been examined to determine whether there are some types of audiences that would respond more favorably than others to inclusion of evidence in persuasive messages. One aspect concerns the intelligence of the receiver. It has been suggested that more intelligent listeners would require more and better evidence. Kline, in the study mentioned earlier, also examined the effects of intelligence by running his study with two groups of high school students.³⁰ One group ranked over the 80th percentile on an intelligence test and the other group ranked below the 50th percentile. For statements of policy, Kline found that those with lower intelligence rated the sources higher on expertness, but opinion change did not differ between the groups. For statements of fact, those with higher intelligence changed their opinion more for specific factual evidence than

³⁰Kline, 1969, p. 407-413.

those with lower intelligence. Thus, it would seem that more intelligent receivers would respond favorably to having specific factual evidence. Again, it should be remembered that this evidence did not contain a reference to a source.

Several studies have investigated a relationship between various personality traits and evidence effectiveness. The first was reported by Robert Bostrom and Raymond Tucker in 1966.³¹ Bostrom and Tucker employed the same levels of evidence used by Cathcart and explained earlier.³² They pretested subjects with an attitude measure, the Rokeach dogmatism scale, the Gough-Sanford rigidity test, and the California F-scale. Their overall results correspond with Cathcart's in that the speeches containing evidence were more effective than the ones not containing evidence. They found no relationship between the personality variables and reactions to evidence.

Kline conducted another study investigating the relationship between dogmatism and evidence in 1971.³³ He pretested subjects with Rokeach's dogmatism test two weeks before they heard a lecture on kinds of evidence. Two weeks after that each student presented a persuasive speech and Kline measured the amount of documented and undocumented evidence included. He found that closedminded speakers used more documented evidence, and openminded speakers used more undocumented evidence. This

³¹Robert N. Bostrom and Raymond K. Tucker, "Evidence, Personality, and Attitude Change," Speech Monographs, 36 (March, 1969), p. 22-27.

³²Cathcart, p. 227-233.

³³John A. Kline, "Dogmatism of the Speaker and Selection of Evidence," Speech Monographs, 38 (November, 1971), p. 354-355.

study focused on the choices of evidence rather than the reaction of personality types to hearing evidence in a persuasive message, but it did indicate a relationship between dogmatism and evidence usage.

In a study discussed above, Fleshler, Ilardo, and Demoretsky examined the role of a receiver trait called field dependence.³⁴ This is "the tendency of some subjects to be strongly influenced by the prevailing visual context." They hypothesized that the greater the field dependence of a subject, the less able the subjects are to make correct discriminations concerning message variables. The only significant result they obtained for field dependence dealt with the question of whether the speaker was qualified to speak on the topic. They found that field dependent subjects rated the speaker higher than field independent subjects. Overall, however, they found field dependence to be unrelated to evidence usage.

These studies indicate that there may be some relationship between evidence usage and receiver characteristics, but the exact nature of that relationship has not yet been identified. Part of the problem in depicting this link may be due to the difficulty in defining personality traits clearly and in selecting the appropriate ones for study.

Evidence and Cross-Cultural Applications

One other area that has received some attention is the question of international applicability of the conclusions about evidence usage.

³⁴ Fleshler, Ilardo, and Demoretsky, p. 389-402.

Harold Hayes reported the results of his study in 1971.³⁵ His subjects were drawn from Americans, Cuban refugees, and Jamaicans at Mico College in Kingston. He presented documented and undocumented messages with both high and low credibility sources. Radio Peking was the low credibility source; the BBC was the high credibility source. He found the higher credible source was more successful in generating attitude change. This is contrary to the results above which indicated that inclusion of evidence should have changed opinion more. Thus, for international persuasion, the most effective persuasion would not include support for its claims. Of course, it could be argued that the sample provided was not a very representative international sample or that the manipulation of source credibility was not successful, so the results should not be weighed very heavily.

Summary of Past Research

This survey of past research has led to a number of conclusions about evidence usage and its value in the persuasive process. It seems that evidence does have a role to play in persuasion, but the past research has not totally clarified that role. The methodologies discussed in several of the studies caused the conclusions to be somewhat tenuous, and many of the studies lack adequate replication. It does not mean that the conclusions reached in the studies should be rejected, but it does indicate that the conclusions should not be regarded as absolutely valid in all circumstances.

³⁵Harold B. Hayes, "International Persuasion Variables Are Tested Across Three Cultures," Journalism Quarterly, (Winter, 1971), p. 714-723.

The definition of evidence employed in the studies has not even been clarified in many instances. Many of the researchers failed to provide a conceptual definition in reporting their studies.³⁶ Others who did define evidence did not seem to follow those definitions consistently.³⁷ A prime example is the study conducted by McCroskey, Young, and Scott. While they claimed to employ McCroskey's definition of evidence, the no evidence condition varied the content of the statements as well as deleting the source of the evidence. Other researchers relying on McCroskey's definition simply deleted the source of the evidence. The concept of evidence that was employed in the surveyed studies varies tremendously so it is difficult to reach comparable conclusions from this research.

This confusion over the concept of evidence is critical to interpretation of the value of evidence in the persuasive process. If McCroskey's definition is rejected, as was proposed at the beginning of the chapter, and a standard like Miller's is accepted in its place, then most of the studies have not really been comparing evidence and no evidence messages. They have instead been comparing evidence attributed to an external source with evidence in the form of opinions or statements attributed to the source of the message. Most of the no evidence conditions merely deleted the external source's name and qualifications, and a few changed specific information to generalizations.

³⁶These studies include Fleshler, Ilardo, and Demoretsky; Warren; Arnold and McCroskey; Anderson; Gilkinson, Paulson, and Sikkink; Dresser; Kline; and Hayes.

³⁷For example, see McCroskey, Young, and Scott; and Kline.

With the limitations imposed by the definitional confusion and the methodological problems in mind, the following conclusions can be drawn from the survey of research:

(1) Source credibility is a factor that may or may not affect evidence's impact, but use of evidence probably increases the credibility of initially low credible sources.

(2) Delivery of speeches can affect evidence's impact in persuasion.

(3) Evidence should be new to the subject to have demonstrable impact.

(4) Evidence inclusion appears to enhance attitude change measured over time, and it appears to enhance resistance to counter-persuasion in formal speech settings.

(5) Inclusion of an authority linked to evidence seems to make no difference in evidence's persuasive impact. This is especially relevant to the discussion of the validity of evidence and no evidence conditions presented above.

(6) Specific evidence appears to generate more attitude change than non-specific evidence.

(7) Intelligence and educational level may be relevant variables in terms of the effectiveness of evidence in statements of fact and in terms of ability to identify "good" and "bad" evidence (in textbook terms). Other receiver characteristics do not appear to affect evidence's effect on attitude change.

Central Questions

The past research has left many questions about evidence unresolved and illustrates the need to rely on a clear definition of evidence when studying evidence usage in persuasion. Past studies that have attempted to identify evidence's role in the persuasive process by comparing evidence and no evidence messages do not seem to have been focusing on the most meaningful distinctions. According to Miller's definition (which is the one this study will employ as explained at the beginning of the chapter), past studies have been comparing evidence attributed to an external source with evidence attributed to the source of the message. It seems appropriate and necessary to look for more meaningful distinctions.

A survey of theoretical literature discussing the proper use of evidence in persuasion led to three categories that seem to be possible meaningful distinctions for evidence. The first and second categories are drawn from tests of evidence. The first grouping deals with the strength and weakness of evidence, and the second category manipulates the relevance of evidence. The third category has to do with the form of the evidence. While a variety of possible types of evidence exist, personal testimony and statistics stand out as two of the most common types of evidence and two of the clearest forms of evidence. Thus, personal testimony and statistics will be utilized as the two forms of evidence in the study.

There are three central questions the proposed study will examine:

- (1) Is there a difference in the persuasive effect of strong and

weak evidence?

(2) Is there a difference in the persuasive effect of relevant and irrelevant evidence?

(3) Is there a difference in the persuasive effect between various forms of evidence? The particular focus will be on personal testimony and statistical evidence.

The explanation and definition of these terms will be presented in Chapter Two along with the details of the experimental procedures.

CHAPTER TWO
METHODOLOGY

The discussion of past research in Chapter One indicated a number of methodological problems with research conducted on evidence in persuasion. This chapter will present the methodological procedures that were employed in the proposed project and discuss the steps taken to minimize methodological problems.

Definitions

One of the most serious concerns drawn from the review of the literature involved a lack of clear definitions of the concept of evidence that is being employed. To resolve uncertainties about the concept of evidence, this study relied on Gerald Miller's definition: "Evidence consists of those data that are intended to induce a sense of belief in the proposition which the data purportedly support."³⁸ As explained in the section on definition of evidence in Chapter One, Miller's definition appears to be the most appropriate definition for evidence. Harte's definition limited evidence to statements, which does not include objects or actions. These can easily operate as evidence for claims. McCroskey's definition was broader, but it required all evidence to be external to the speaker. That would exclude personal testimony, visual evidence generated by the source of the message, and other forms of material that function as evidence in the same manner that material external to the speaker would. Miller's definition appears to be the only one broad enough to encompass all material that functions as evidence in persuasive situations.

³⁸Wall, p. 115-123.

There were, however, other definitional concerns involved in the study. The three questions posed at the end of Chapter One dealt with three criteria for evidence classification: types of evidence, strength of evidence, and relevance of evidence. A clear explanation of each of these concepts was necessary to be able to understand and employ them in the research project.

The first issue concerned the types of evidence to be employed. Theorists writing in public speaking and argumentation texts have offered different classification schemes for evidence,³⁹ however, two forms of evidence appear to be common to all discussions--"testimony" and "statistics." The definitions of testimony and statistics employed in this project and presented to subjects were:

Testimony refers to evidence in the form of opinions or conclusions drawn by the author of the message. These opinions or conclusions can be personal--drawn by the author--or by reference to opinions or conclusions of others.⁴⁰

³⁹For example see: Alan H. Monroe and Douglas Ehninger, Principles of Speech Communication, 7th brief edition (Glenview, Illinois: Scott Foresman and Co., 1975), p. 110-122.

George W. Ziegelmüller and Charles A. Dause, Argumentation: Inquiry and Advocacy (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975), p. 51-53.

James Edward Sayer, Argumentation and Debate: Principles and Applications (Sherman Oaks, California: Alfred Publishing Co., Inc. 1980), p. 171-180.

J. Vernon Jensen, Argumentation: Reasoning in Communication (New York: D. Van Nostrand Co., 1981), p. 123-128.

⁴⁰Drawn from Monroe and Ehninger, p. 119.

Statistics are figures which indicate relationships among phenomena or which summarize and interpret bodies of data; they express facts in numerical form.⁴¹

These definitions offered a clear distinction between the two types of evidence employed.

The second definitional concern involved the concept of strength and weakness of the evidence. Each evidence type has unique tests of evidence. Tests for the different types of evidence vary in number and phrasing from theorist to theorist, but the following tests seemed common and fairly concise. The criteria for strong testimony were:

The person testifying should be reasonably unbiased.

The person testifying should be in a position to examine the relevant facts at first hand.⁴²

The criteria for strong statistical evidence were:

Strong statistics should be based upon adequate sampling techniques. If a sample does not adequately represent all of the elements within a class, the resultant statistic will be quite misleading. A survey of medical financing in the city of Baltimore seemed to support the claim that failure to receive adequate medical care was not related to ability to pay. When the survey techniques underlying the study were

⁴¹Drawn from Alah H. Monroe and Douglas Ehniger, Principles of Speech Communication, 6th brief edition (Glenview, Illinois: Scott Foresman and Co., 1969), p. 139

⁴²Drawn from Douglas Ehniger and Wayne Brockriede, Decision By Debate, 2nd edition (New York: Harper and Row, 1978), p. 62-63.

examined they discovered that all people earning less than the national median income had been excluded from the survey sample. An unrepresentative sample made the survey invalid.

The statistics should cover an appropriate time period. Many times statistics are used to describe a situation over a given period of time. It then becomes critical to know whether the time period selected is appropriate for the purposes at hand. In measuring concepts like economic growth, inflation, and employment, the selection of base years and the length of time measured can have a significant effect upon the impression created by the statistic.⁴³

While the criteria for strong testimony appear simple enough for anyone to understand without further explanation, the criteria for strong statistics seemed to require inclusion of some explanation in order to make sure the concepts were clearly understood by the subjects.

The third issue concerned the concept of relevance. Relevance also seemed to require explanation to insure clarity of the concept. The resulting definition employed was:

The test of relevancy asks the question, "Does the data support the conclusions it is asserted to support?" This test suggests that the data can be credible in every other respect but may still be an insufficient basis for argument because it is tangent to the conclusion being forwarded. If, for example, a person claimed that a particular beverage tasted good and

⁴³Drawn from Ziegelmueller and Dause, p. 76-78.

offered evidence that he/she had lost weight while drinking that beverage, the evidence (lost weight) would be irrelevant to the claim (the good taste of the beverage).⁴⁴

Thus, relevance referred to whether or not the evidence actually supported the initial claim.

Research Hypotheses

With these concepts clarified, the research hypotheses were posited. The issue of evidence relevance was addressed in a study conducted by Kline⁴⁵ and summarized in Chapter One. In that study, Kline was only interested in subjects' ability to classify evidence rather than an examination of the persuasive effect of evidence relevance. In keeping with the guidelines discussed earlier drawn from public speaking and argumentation texts,⁴⁶ it seemed logical to hypothesize that relevant evidence would have more persuasive impact than irrelevant evidence.

The research conducted by Harte⁴⁷ and Kline⁴⁸ indicated that subjects have difficulty distinguishing between evidence that meets the criteria for strong evidence and evidence that does not. Dresser⁴⁹ also

⁴⁴The definition is from Ziegelmüller and Dause, p. 71 and the example is my own.

⁴⁵Kline (1971), p. 190-197.

⁴⁶Ziegelmüller and Dause, p. 115

⁴⁷Harte, p. 109-115

⁴⁸Kline (1971), p. 190-197

⁴⁹Dresser, p. 302-306.

found no attitude change between those types. Hypothesis two was not consistent with that past research for two reasons. First, the guidelines from public speaking and argumentation theorists suggested that strong evidence ought to have more weight than weaker forms of evidence.⁵⁰ Secondly, the research project employed criteria for strength and weakness that were unique to each form of evidence employed. Since the criteria have been changed from what had been employed in previous research, there was reason to believe the theorists may have been right. Hypothesis two was designed to test that possibility. Hypothesis three was a composite of one and two and was generated by the same information that led to those hypotheses.

The survey of literature reported in Chapter One found no past research that examined the issue addressed in hypothesis four. When types of evidence were examined previously, both Cathcart⁵¹ and Kline⁵² looked at specific versus general evidence. It seemed plausible that testimony and statistics would have differing persuasive effects, but there was no body of research that would lead to the prediction of which form was likely to be the strongest.

The resulting hypotheses were:

H₁ - Relevant evidence will have more persuasive impact than irrelevant evidence.

⁵⁰See footnote 38.

⁵¹Cathcart, p. 227-233.

⁵²Kline (1969), p. 407-413.

H₂ - Strong evidence will have more persuasive impact than weak evidence.

H₃ - Strong relevant evidence will be more persuasive than weak relevant, strong irrelevant, or weak irrelevant evidence.

H₄ - There will be differing persuasive effects between the types of evidence.

Research Design

In order to test these hypotheses the following two by two by two factorial design was employed:

		STATISTICS	TESTIMONY
STRONG	RELEVANT		
	IRRELEVANT		
WEAK	RELEVANT		
	IRRELEVANT		

Messages

Research on evidence and prior knowledge discussed in Chapter One suggested that the evidence should be new to subjects in order to have an effect.⁵³ Thus, a topic new to the subjects would appear to have the greatest potential for showing any effects evidence produces. At the same time, the topic should be realistic enough to have credibility with subjects. The topic chosen for this study was a relatively new product on the market--an ion machine called "Energair." The use of a real, but new, product offered a basis for legitimate claims to be constructed

⁵³See McCroskey (1969), p. 173 and Wall, p. 115.

and yet still allowed the evidence to be new to subjects.

The use of a new product, however, called for a control cell to be added to the design. It was quite possible that subjects could have responded to simply understanding what an Energaire was since it was to be new to them rather than responding to the evidence contained in the messages. Explanation of what the Energaire was and how it operated was offered in the control cell to provide an additional check on the results. Comparisons of the control cell with the experimental cells were designed to allow a check on whether results due simply to explanation of a new product were significantly different from results due to manipulations of the evidence variables.

Each message must meet certain criteria in order to vary only the evidence content. Source credibility must be held constant to eliminate it as a possible explanation for any results. The messages must be approximately the same length, and they all must make the same claims. Since the Energaire was expected to be a new product for the subjects, explanation (the same one as in the control cell) was added to the beginning of each message. Finally, the messages needed to embody the criteria established for each evidence variable as closely as possible while still adhering to other limitations.

Testimonial evidence was presented in the message as personal testimony from a staff member of the Consumer Product Information Bureau. Statistical evidence was presented as the results of research conducted by the Consumer Product Information Bureau and contained numerical figures to convey the data.

The strong testimonial conditions illustrated the staff member presenting evidence garnered from his personal experiences and that of his family. The weak testimonial condition offered the same person presenting the same evidence, but this time the evidence was attributed to biased, second-hand sources--his neighbor who sells the Energaire, and his neighbor's family.

The strong statistical conditions have messages that presented the research as employing carefully selected random sampling procedures with numerous trials over long periods of time. The weak statistical conditions contained the same numerical conclusions, but here the sampling procedures were not random or carefully enacted, and the samples were not drawn from a representative population. The messages also indicated to the subjects that the research was conducted over a very short period of time.

The relevance manipulations were the same for both testimony and statistics. The relevant conditions presented evidence that related directly to the claim. For example, in dealing with the claim that the Energaire removes smoke from the air, all relevant messages discussed a test where a bowl filled with smoke was held over the Energaire with the smoke subsequently disappearing. All irrelevant messages for the same smoke removal claim presented evidence that people were livelier and happier after an Energaire was present. Similar contrasts were employed for the other three claims. The resulting nine messages can be found in Appendix A.

Pilot Test

After the messages were created, the next step involved a pilot test. The purpose of the pilot test was to insure that the messages embodied the evidence variables as they should. For the pilot test, subjects were given a package of information. It consisted of a consent statement, an explanation of what they were asked to do, a definition of evidence, and two messages--each followed by a questionnaire. The questionnaire provided each subject with definitions of the types of evidence, an explanation of relevance, and the criteria for strong evidence in each category. The subjects were asked to evaluate the evidence contained in each message by deciding whether the evidence contained in it was statistical or testimonial, whether it was strong or weak according to the criteria presented, and whether it was relevant or irrelevant. The questionnaire had room for comments as well. A copy of the information and questionnaire for the pilot test can be found in Appendix B.

The subjects for both the pilot test and the main study were randomly drawn from introductory communication courses at George Mason University. The messages for the pilot test were randomly distributed so that each subject had an equal opportunity to receive any two messages in random order. The same experimenter was used in all sections so that experimenter credibility remained constant in all conditions. The results of the pilot test questionnaires were tested with a Chi Square formula to evaluate significance.

Main Study

After the pilot test results indicated workable messages, the main study took place. Each subject in the main study was presented with a package containing a consent statement, a message, a study questionnaire, and a manipulation check questionnaire. Subjects were requested to read the message and answer the questionnaires in order without looking ahead. This way the subjects were asked to evaluate the product described in the message before they evaluated the evidence in the manipulation check questionnaire.

The study questionnaire contained ten questions and room for comments. The first question asked subjects whether they would be likely to buy the Energaire. Their behavioral intentions were measured on a seven point scale. The next four questions asked subjects about their level of belief in the four claims made about the Energaire in the messages. The claims are: (1) the Energaire removes smoke from the air, (2) the Energaire removes pollution from the air, (3) the Energaire helps people sleep better, and (4) the Energaire helps people think better and be more alert at work. These responses were also measured on a seven point scale. The sixth question offered subjects six price ranges between \$0 and \$180, and the subjects were asked to indicate how much they would be willing to pay for an Energaire. The seventh question, in order to find out if it was really a new product to them, asked subjects if they had previously heard of the Energaire. The last three questions asked subjects for demographic information: their age, sex, and level in school. The bottom of the questionnaire's page was left for

comments. The manipulation check questionnaire that followed the main study questionnaire was the same questionnaire described in the pilot test. Copies of the consent statement and questionnaires employed in the main study can be found in Appendix C.

The sample for the main study was drawn from the same population as the sample employed for the pilot study (without replacement). The same experimenter was used to administer the study each time in order to insure consistent experimenter credibility and consistent instructions to subjects. The messages were randomly assigned to the subjects so that each person had an equal chance of receiving any one of the nine messages. An analysis of variance was run on the results of the data for each of the first six questions (six ANOVAs), and a T-test was run comparing each cell to the control cell for each of the six questions (48 T-tests). A .05 level was set as the significance level for the statistical tests.

Every effort was made to control for systematic error. The same source was employed in each message, and the manipulations of evidence were consistent. The same experimenter was employed in all cases, and the messages were distributed randomly to randomly selected subjects. The results of this research will be presented in Chapter Three.

CHAPTER THREE

RESULTS

Pilot Test Results

The first stage of experimental results involves the pilot test of the messages themselves. The eight versions of messages employed in the two by two by two design were presented to subjects to insure that the messages embodied the intended concepts. A Chi Square was performed on the results of the pilot test to find out if there was a significant difference in the perception of the messages. The results are presented in Table One.

TABLE ONE
CHI SQUARE RESULTS FOR PILOT STUDY

<u>Variable</u>	<u>X² Value</u>	<u>Critical Value</u>	<u>Sig. at .05</u>
Testimony	214.61	5.991	Yes
Statistics	114.87	5.991	Yes
Strong/Weak Difference in Testimony	7.04	3.841	Yes
Strong/Weak Difference in Statistics	6.06	3.841	Yes
Relevant/Irrelevant Difference in Testimony	10.76	3.841	Yes
Relevant/Irrelevant Difference in Statistics	9.02	3.841	Yes

Information concerning the specific responses in each cell is contained in Appendix D, Table One. The results indicated subjects perceived a significant difference between messages, so the main study was conducted utilizing these messages.

Main Study Results

The first data analysis run on the results of the main study questionnaire employed the SPSS computer package analysis of variance. One ANOVA was run on the results of the two by two by two design for each of the first six questions. The six results of the analysis of variance procedures are presented in Tables Two through Seven in Appendix D. The mean scores and standard deviations for each of the first six questions in both the experimental cells and the control cell are presented in Tables Two through Eight in this chapter. Table Nine provides a summary of the significant results of the ANOVA tests for each hypothesis.

TABLE TWO

MEANS AND STANDARD DEVIATIONS FOR QUESTION ONE

"Would you consider buying an Energaire?"

		STATISTICS	TESTIMONY	
STRONG	RELEVANT	\bar{X} 4.8500	\bar{X} 3.8000	4.3250
		S 1.755	S 1.963	
	IRRELEVANT	\bar{X} 4.200	\bar{X} 3.6000	3.9000
		S 1.795	S 1.698	
WEAK	RELEVANT	\bar{X} 4.4500	\bar{X} 3.7000	4.0750
		S 1.468	S 2.319	
	IRRELEVANT	\bar{X} 3.8000	\bar{X} 3.3000	3.5500
		S 1.881	S 1.838	
		4.2750	3.6000	

TABLE THREE

MEANS AND STANDARD DEVIATIONS FOR QUESTION TWO

"Do you think the Energaire removes smoke from the air?"

	STATISTICS	TESTIMONY	
RELEVANT	\bar{X} 4.4000	\bar{X} 4.3500	4.3750
	S 1.875	S 1.725	
STRONG			
IRRELEVANT	\bar{X} 4.200	\bar{X} 3.8500	4.0250
	S 1.609	S 1.814	
RELEVANT	\bar{X} 4.5500	\bar{X} 4.6500	4.6000
	S 1.761	S 1.694	
WEAK			
IRRELEVANT	\bar{X} 3.7500	\bar{X} 3.5500	3.6500
	S 1.410	S 1.986	
	4.2250	4.1000	

TABLE FOUR

MEANS AND STANDARD DEVIATIONS FOR QUESTION THREE

"Do you think the Energaire removes pollution from the air?"

	STATISTICS	TESTIMONY	
RELEVANT	\bar{X} 4.4500	\bar{X} 4.0500	4.2500
	S 1.761	S 1.986	
STRONG			
IRRELEVANT	\bar{X} 3.7500	\bar{X} 3.5500	3.6500
	S 1.650	S 1.791	
RELEVANT	\bar{X} 4.0500	\bar{X} 4.1500	4.100
	S 1.905	S 1.872	
WEAK			
IRRELEVANT	\bar{X} 3.6500	\bar{X} 2.9500	3.3000
	S 1.424	S 1.761	
	3.9750	3.6750	

TABLE FIVE

MEANS AND STANDARD DEVIATIONS FOR QUESTION FOUR

"Do you think the Energaire helps people sleep better?"

	STATISTICS	TESTIMONY	
RELEVANT	\bar{X} 4.6000	\bar{X} 3.9000	4.2500
	S 1.818	S 1.714	
STRONG			
IRRELEVANT	\bar{X} 4.1500	\bar{X} 3.9500	4.0500
	S 1.872	S 1.317	
RELEVANT	\bar{X} 4.7000	\bar{X} 3.4000	4.0500
	S 1.174	S 2.088	
WEAK			
IRRELEVANT	\bar{X} 3.9500	\bar{X} 3.4500	3.7000
	S 1.731	S 1.761	
	4.3500	3.6750	

TABLE SIX

MEANS AND STANDARD DEVIATIONS FOR QUESTION FIVE

"Do you think the Energaire helps people to think more clearly and be more alert at work?"

	STATISTICS	TESTIMONY	
RELEVANT	\bar{X} 4.7500	\bar{X} 3.6000	4.1750
	S 1.743	S 1.698	
STRONG			
IRRELEVANT	\bar{X} 3.5500	\bar{X} 3.7500	3.6500
	S 1.791	S 1.618	
RELEVANT	\bar{X} 3.8000	\bar{X} 3.8000	3.8000
	S 1.436	S 1.963	
WEAK			
IRRELEVANT	\bar{X} 3.9000	\bar{X} 3.0500	3.475
	S 1.971	S 1.731	
	4.0000	3.5500	

TABLE SEVEN

MEANS AND STANDARD DEVIATIONS FOR QUESTION SIX

"How much would you be willing to pay for an Energaire?"

	STATISTICS		TESTIMONY		
RELEVANT	\bar{X}	1.9000	\bar{X}	1.4500	1.6750
	S	.788	S	.605	
STRONG IRRELEVANT	\bar{X}	1.7000	\bar{X}	1.4000	1.5500
	S	1.031	S	.821	
RELEVANT	\bar{X}	1.9500	\bar{X}	1.7000	1.8250
	S	1.050	S	1.261	
WEAK IRRELEVANT	\bar{X}	1.8500	\bar{X}	1.7500	1.8000
	S	.933	S	1.293	
		1.8500		1.5750	

TABLE EIGHT

MEANS AND STANDARD DEVIATIONS FOR CONTROL CELL

QUESTION	\bar{X}	S
1	3.8500	1.785
2	4.0000	1.622
3	3.8000	1.542
4	3.6000	1.569
5	3.4500	1.605
6	1.8500	1.429

TABLE NINE
SIGNIFICANT ANOVA TESTS FOR EACH HYPOTHESIS

	Sum of Squares	DF	Mean Square	F	Significance of F
H ₁ - Relevance					
Q 2	16.900	1	16.900	5.569	.020
Q 3	19.600	1	19.600	6.212	.014
H ₂ - Strength					
No significant results					
H ₃ - Strength/Relevance					
No significant results					
H ₄ - Evidence Type					
Q 1	21.025	1	21.025	6.119	.014
Q 4	18.225	1	18.225	6.253	.013
Not Hypothesized					
Strength/Relevance/ Evidence Type					
Q 5	12.100	1	12.100	3.943	.049

The results of the analysis of variance tests show that hypothesis one--relevant evidence will have more persuasive impact than irrelevant evidence--was supported by the results of questions two and three only. Hypothesis two--strong evidence will have more persuasive impact than weak evidence--and hypothesis three--strong relevant evidence will be more persuasive than weak relevant, strong irrelevant, or weak irrelevant evidence--were not supported by the results of any of the questions.

Hypothesis four--there will be differing persuasive effects between the types of evidence--was supported by the results of questions one and four only. No three-way interaction was hypothesized, but the results indicated one occurred in the results of question five. Thus, only hypotheses one and four had any support from the data, and that support was only partial.

The next statistical test called for was not designed to test the hypotheses but to search for alternative explanations of any possible results. The control cell message contained explanation only, and this test employed the SPSS package T-test between the control cell and the experimental cells for each of the first six questions. This test was designed to find out whether explanation of the new product alone resulted in significantly different results than the evidence manipulations in the experimental cells. The complete results of the T-tests are presented in Tables Eight through Fifteen in Appendix D. Table Ten in this chapter presents only the significant results of the T-test. Only the results of the comparison with strong relevant statistics on question five and weak relevant statistics on question four were significant. Since only two of the forty-eight comparisons were significant, it would seem that explanation alone yielded the same results as the evidence manipulations. While this finding does not relate directly to the testing of the hypotheses, it does have implications for the results that will be discussed in Chapter Four.

TABLE TEN
SIGNIFICANT T-TEST RESULTS

CELL	T Value	DF	2-Tailed Probability
Strong Relevant Statistics			
Question Five	2.45	38	.019
Weak Relevant Statistics			
Question Four	2.51	38	.016

The final test of the main study results required a chi square analysis of the manipulation check data. The chi square results of the pilot test indicated subjects perceived a significant difference between the messages. The purpose of the manipulation check was to find out whether subjects in the main study also perceived a difference between messages. The results are presented in Table Eleven.

TABLE ELEVEN

CHI SQUARE RESULTS FOR MANIPULATION CHECK OF MAIN STUDY

<u>VARIABLE</u>	<u>X² Value</u>	<u>Critical Value</u>	<u>Sig. at .05</u>
Testimony/Statistics Difference	53.20	3.841	Yes
Strong/Weak Difference for Testimony	1.40	3.841	No
Strong/Weak Difference for Statistics	.91	3.841	No
Relevant/Irrelevant Difference for Testimony	4.07	3.841	Yes
Relevant/Irrelevant Difference for Statistics	1.40	3.841	No
Strong/Weak Difference	2.28	3.841	No
Relevant/Irrelevant Difference	5.10	3.841	Yes

Information about the specific responses in each cell is presented in Appendix D in Table Sixteen. The results indicated that subjects perceived a significant difference between message types, relevant and irrelevant evidence overall, and relevant and irrelevant testimony messages; but there was no significant difference perceived between strong and weak messages overall or within the categories of testimony or statistics.

Additional Data Analysis

Most of the results presented so far have indicated that evidence type, strength, and relevance were not generally important variables in determining the persuasive effect of messages. However, the lack of

significant differences in perceptions of the messages found in the manipulation check and the comments of subjects, coupled with the counter-intuitive nature of these results, led to the need to re-categorize the data for further analysis.

The nature of the hypotheses generated for this study and others of its kind assumed that the process of persuasion followed a specific sequence. The assumption is that claims are heard, evidence for the claim is analyzed, and then resulting beliefs or attitudes are modified according to the nature of support for the claims. In other words, the evidence is seen as having a direct causal relationship on beliefs or attitudes, and it is seen as a one-way process. If the evidence is good (strong, relevant, appropriate type) then the claim should be accepted. If the evidence is not good (weak, irrelevant, inappropriate type) then the claim should be rejected. In all instances, the evidence is supposed to be what influences the beliefs or attitudes in a unidirectional, temporally ordered process. The beliefs or attitudes a subject holds may very well influence his or her perceptions of the evidence's validity. If people believe a claim or hold favorable attitudes, they may be more likely to perceive the evidence as being strong or relevant. If they do not believe a claim or hold unfavorable attitudes, they may perceive the evidence as being weak or irrelevant. A re-categorization of the data allowed this modified view of the persuasive process to be examined more closely.

While the following tests were not designed to test the study hypotheses, the results of further analysis might provide additional directions for further research. For the data analysis reported in this

section, the data was re-categorized according to each subject's perception of the message in terms of its strength of weakness and relevance or irrelevance. Thus, rather than keeping the messages in their originally designed cells, each message was placed into a new cell determined by subject response. For example, if a subject indicated a message was strong and irrelevant, then that is the cell it was placed in.

This reliance on subject perceptions led to the creation of cells with greatly differing cell sizes. The cells for the re-categorized data ranged in size from three to thirty. The first data analysis run on the re-categorized data employed the SPSS computer package analysis of variance. The regression approach to uneven cell size was chosen. One ANOVA was run on the results of the new two by two by two design for each of the first six questions. The complete results of those ANOVAs can be found in Appendix D in Tables Seventeen through Twenty-two. Table Twelve in this chapter provides a summary of only the significant results from these tests. Tables Thirteen through Eighteen in this chapter present the means and standard deviations for the re-categorized data.

TABLE TWELVE

SIGNIFICANT RESULTS FROM RE-CATEGORIZED DATA ANOVA

Question	Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
1	Strength	21.176	1	21.176	7.551	.007
1	Relevance	28.847	1	28.847	10.287	.002
2	Relevance	37.333	1	37.333	13.906	.000
3	Strength	17.591	1	17.591	6.074	.015
4	Relevance	10.547	1	10.547	3.898	.050
5	Relevance	15.051	1	15.051	5.060	.026

TABLE THIRTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION ONE

"Would you consider buying an Energaire?"

		STATISTICS	TESTIMONY	
	RELEVANT	\bar{X} 5.3300 S 1.579	\bar{X} 4.8889 S 1.641	5.1409
STRONG	IRRELEVANT	\bar{X} 4.0000 S 1.000	\bar{X} 3.7500 S .886	3.8182
	RELEVANT	\bar{X} 4.2333 S 1.682	\bar{X} 3.8400 S 1.864	4.0545
WEAK	IRRELEVANT	\bar{X} 3.4783 S 1.620	\bar{X} 2.5517 S 1.882	2.9615
		4.3365	3.5999	

TABLE FOURTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION TWO

"Do you think the Energaire removes smoke from the air?"

		STATISTICS	TESTIMONY	
STRONG	RELEVANT	\bar{X} 4.9583 S 1.654	\bar{X} 5.0000 S 1.455	4.9762
	IRRELEVANT	\bar{X} 3.6667 S 1.155	\bar{X} 3.5000 S 1.852	3.5455
WEAK	RELEVANT	\bar{X} 4.4000 S 1.567	\bar{X} 4.5600 S 1.781	4.4727
	IRRELEVANT	\bar{X} 3.3043 S 1.490	\bar{X} 3.3103 S 1.755	3.3076
		4.2249	4.4499	

TABLE FIFTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION THREE

"Do you think the Energaire removes pollution from the air?"

		STATISTICS	TESTIMONY	
STRONG	RELEVANT	\bar{X} 4.3750 S 1.715	\bar{X} 4.8333 S 1.465	4.5714
	IRRELEVANT	\bar{X} 4.3333 S .577	\bar{X} 4.0000 S 2.000	4.0908
WEAK	RELEVANT	\bar{X} 4.0000 S 1.682	\bar{X} 3.9600 S 1.837	3.9818
	IRRELEVANT	\bar{X} 3.4348 S 1.779	\bar{X} 2.6207 S 1.635	2.9808
		3.9625	3.6749	

TABLE SIXTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION FOUR

"Do you think the Energaire helps people sleep better?"

		STATISTICS		TESTIMONY	
STRONG	RELEVANT	\bar{X} 5.0417 S 1.756	\bar{X} 4.6667 S 1.414	4.8809	
	IRRELEVANT	\bar{X} 4.0000 S 1.0000	\bar{X} 3.5000 S .756	3.6364	
WEAK	RELEVANT	\bar{X} 4.1000 S 1.398	\bar{X} 3.5600 S 1.609	3.8545	
	IRRELEVANT	\bar{X} 4.0000 S 1.834	\bar{X} 3.1379 S 1.959	3.5192	
		4.3500	3.6499		

TABLE SEVENTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION FIVE

"Do you think the Energaire helps people to think more clearly and be more alert at work?"

		STATISTICS		TESTIMONY	
STRONG	RELEVANT	\bar{X} 4.5417 S 1.956	\bar{X} 4.2222 S 1.833	4.4048	
	IRRELEVANT	\bar{X} 3.3333 S 1.528	\bar{X} 3.6250 S 1.302	3.5454	
WEAK	RELEVANT	\bar{X} 4.0000 S 1.509	\bar{X} 3.8400 S 1.519	3.9273	
	IRRELEVANT	\bar{X} 3.5217 S 1.855	\bar{X} 2.8621 S 1.827	3.1538	
		3.9999	3.5500		

TABLE EIGHTEEN

MEANS AND STANDARD DEVIATIONS FOR RE-CATEGORIZED DATA QUESTION SIX

'How much would you be willing to pay for an Energaire?'

		STATISTICS		TESTIMONY	
STRONG	RELEVANT	\bar{X} 1.8750	\bar{X} 2.1111	3.4841	
		S .947	S 1.323		
	IRRELEVANT	\bar{X} 1.6667	\bar{X} 1.1250	1.2727	
		S .577	S .354		
WEAK	RELEVANT	\bar{X} 1.7667	\bar{X} 1.7200	1.7455	
		S 1.040	S 1.208		
	IRRELEVANT	\bar{X} 1.9130	\bar{X} 1.2414	1.5385	
		S .949	S .511		
		1.8375	1.5750		

The results of the analysis of variance tests on the re-categorized data show that strength of evidence had significant results for two of the questions, and relevance of evidence had significant results for four of the questions. No significant results were found for any two-way interactions, any three-way interaction, or a main effect for evidence type.

A T-test was also performed on the re-categorized data. This test employed the SPSS package T-test between the control cell and the re-categorized experimental cells for each of the first six questions. The complete results of the T-tests are presented in Tables Twenty-Three through Thirty in Appendix D. A summary of only the significant results from the re-categorized data T-tests is presented in Table Nineteen in this chapter.

TABLE NINETEEN
SIGNIFICANT T-TEST RESULTS OF RE-CATEGORIZED DATA

Cell	T Value	DF	2-Tailed Probability
Strong Relevant Statistics			
Question One	2.92	42	.006
Question Four	2.84	42	.007
Strong Relevant Testimony			
Question Three	2.11	36	.042
Question Four	2.19	36	.035
Weak Irrelevant Testimony			
Question One	-2.42	47	.019
Question Three	-2.54	47	.014
Question Six	-2.12	47	.039

While there were an increased number of significant differences between the control cell and the re-categorized experimental cells, seven out of forty-eight comparisons being significantly different still do not indicate that explanation alone operated much differently than the evidence manipulations.

Another examination of the data that is not designed to test the hypothesis concerns subject responses to question seven--Had you ever heard about an Energaire before? The 160 subjects in the experimental cells were divided into two groups based on their prior knowledge of the Energaire. Only 26 of the subjects reported prior knowledge. A T-test

of the results between the two groups was conducted for each of the first six questions. Complete results are presented in Table Thirty-One in Appendix D. A summary of the significant results appears in Table Twenty in this chapter, and the means and standard deviations are presented in Table Twenty-One in this chapter.

TABLE TWENTY
SIGNIFICANT RESULTS OF PRIOR KNOWLEDGE T-TEST

<u>Question</u>	<u>T Value</u>	<u>DF</u>	<u>2-Tailed Probability</u>
One	2.56	158	.011
Three	2.25	158	.026
Five	2.57	158	.011

TABLE TWENTY-ONE
MEANS AND STANDARD DEVIATIONS FOR PRIOR KNOWLEDGE DATA TESTS

<u>Question</u>	<u>Prior Knowledge</u>		<u>No Prior Knowledge</u>	
One	\bar{X}	4.8077	\bar{X}	3.7985
	S	1.497	S	1.899
Two	\bar{X}	4.5000	\bar{X}	4.0970
	S	1.924	S	1.707
Three	\bar{X}	4.5385	\bar{X}	3.6866
	S	1.630	S	1.791
Four	\bar{X}	4.5769	\bar{X}	3.9030
	S	1.501	S	1.751
Five	\bar{X}	4.5769	\bar{X}	3.6194
	S	1.579	S	1.768
Six	\bar{X}	1.7692	\bar{X}	1.7015
	S	1.070	S	.981

The results indicated that subjects who had heard of the product previously responded significantly more favorably on three of the six questions than did those not reporting prior knowledge. Even for the questions without statistically significant differences, the results followed the same trend.

A more complete discussion of all the results presented in this chapter will be provided in Chapter Four.

CHAPTER FOUR
DISCUSSION OF RESULTS

Messages

The data analysis reported in Chapter Three provided a variety of results for discussion. One of the first issues that needs to be addressed deals with the validity of the categories of messages the study dealt with. All of the hypotheses the study was designed to test rested on the assumption that it was possible to create messages that varied according to evidence type, evidence strength and weakness, and evidence relevance and irrelevance. The results of the pilot test Chi Square analysis indicated that the messages employed in the study were significantly different from each other in those three categories.

The results of the Chi Square analysis on the manipulation check of the main study yielded different conclusions. While a significant difference was perceived between evidence in the form of testimony and statistics and between relevant and irrelevant evidence overall, no significant differences were perceived between strong and weak evidence overall or in any category. There was also no significant difference perceived between relevant and irrelevant evidence for statistics, even though relevant and irrelevant messages overall were perceived as significantly different.

The difference in results between the pilot test data and the main study data requires some explanation. Part of the difference may lie in variation in the type of instructions given to subjects for the pilot test and the main study. In both instances, the data was collected during part of a class in which a limited amount of time was available. For the pilot test, instructions focusing on the nature of the message

and the distinctions between types of evidence categories were presented orally and in writing. There were no oral instructions provided for the manipulation check questionnaire during the main study data collection process. In order to avoid alerting subjects to the key element under study before they answered the attitude questionnaire about the Energaire, no mention could be made about the manipulation check questionnaire. Since time was also a factor, students were allowed to proceed at their own pace, and the instructions for the second questionnaire (the manipulation check) were in writing only. It is possible that subjects failed to read the written instructions completely or that they failed to understand them as clearly.

Another possible explanation for the difference may have to do with the order of the questionnaires. In the pilot test, subjects were not asked to draw any conclusions about the Energaire itself - only the evidence in the messages. In the main study, however, subjects were requested to commit themselves to an evaluation of the desirability of the Energaire and their level of belief in the claims about the Energaire's performance before evaluating the nature of the evidence in the messages. It is quite possible that their judgment of the Energaire affected their judgment about the evidence itself. If this explanation were responsible for the shift in perception of the messages, it could support the theory behind the re-categorization of the data. If the subjects' evaluations of the Energaire did indeed influence their judgment of the evidence in the messages that would further support re-evaluation of the concept of the evidence--attitude or evidence--belief relationship being a

uni-directional, temporally ordered process.

The results of the pilot test indicated that a comparable group of subjects did perceive the messages to be different from each other. The problems identified above do not necessarily mean the messages were not different, and there is reason to believe they are different. It does indicate that the results of the main study should at least be perceived to be tentative. Further study should be undertaken to validate any interpretations from this study's data.

Main Study Hypotheses

Hypothesis one predicted that relevant evidence would have more persuasive impact than irrelevant evidence. A significant difference was found in only two questions. For both questions two and three, relevant evidence resulted in more persuasive impact than irrelevant evidence, thereby offering partial support for this hypothesis. Question two asked subjects to indicate their level of belief in claims about the Energaire's smoke removal capability, and question three asked subjects about their level of belief in the Energaire's pollution control capability. Both of the questions dealt with concrete and clear concepts, while the other belief questions centered on more abstract and less definable consequences like better sleep and better work. It may be that the difference in the type of claims led to difference in results. In other words, the degree of evidence relevance may significantly influence concrete beliefs while having no differential impact upon abstract beliefs.

Hypothesis two predicted that strong evidence would have more

persuasive impact than weak evidence. There were absolutely no significant differences found between strong and weak evidence. The experimental results thus provide no support for this research hypothesis. As explained above, the manipulation check found that subjects failed to perceive any significant difference between strong and weak evidence. It would seem logical that no significant difference in persuasive effect could be expected under those circumstances.

Hypothesis three predicted that strong relevant evidence would have more persuasive impact than weak relevant, strong irrelevant, or weak irrelevant evidence. No two-way interactions were found so there was no support for this hypothesis. Again, the fact that subjects failed to perceive a significant difference between the strong and weak evidence would lead to the conclusion that any interactions involving evidence strength would not be likely to occur.

Hypothesis four predicted that there would be differing persuasive effects between the types of evidence. A significant difference for evidence type was found only in questions one and four. In both cases evidence in the form of statistics was found to be more persuasive than evidence in the form of testimony. No significant differences were found for the other four questions.

It would seem that hypothesis four is only partially supported by the data. Question one asked subjects if they would be willing to buy an Energair. It asked for an overall evaluation of the product, while questions two through five asked subjects to focus specifically on their level of belief in the claims made about the Energair. Question four

asked subjects about whether they believed the Energairé aided sleep. It may be that there is no consistent overall difference in effects for the two types of evidence in messages, but when there is a difference, statistical evidence is favored over testimony.

No other interactions were hypothesized, but a three-way interaction between evidence type, strength, and relevance did occur for question five. This was not a consistent finding and it does not seem possible to base any conclusion on this isolated, unpredicted result.

Overall, partial support was provided only for hypotheses one and four. Given the questions raised above about the problems in the manipulation check data, these findings (and lack of findings) cannot be given great weight without some form of replication of this study.

T-Test Results

A control cell containing a message that only included an explanation of how an Energairé operates was added onto the experimental design. The purpose of including this cell was related to the Energairé being a new product, and it was not tied to tests of the hypotheses. It was quite possible that subjects might have responded to simply understanding what an Energairé was, so a T-test was performed between the control cell and each experimental cell for each of the six questions. Out of forty-eight comparisons, only two significant differences were found. Strong relevant statistics had more persuasive impact than the control cell for question five, and weak relevant statistics were more persuasive than the control cell message for question four. These two significant differences out of forty-eight comparisons led to the conclusion

that an explanation of the Energaire's function was generally as effective as any of the variations of evidence contained in the messages. As this pattern was obtained for weak and irrelevant evidence, as well as strong and irrelevant evidence, it appears it is attributable to the previously discussed variable manipulation difficulties and the resulting high error (i.e. within cell) variance.

The results of these T-tests can raise further questions about the success of the evidence manipulations in the main study and about the strength of the support for the body hypotheses. It should be noted, however, that these results do not necessarily dispute the interpretation of the study hypotheses presented above. This control cell was not a control in the sense of offering subjects a chance to respond to a questionnaire with no manipulations performed. The subjects in the control cell were given an explanation of the way that the Energaire works, and explanation can be considered a form of evidence rather than a no evidence condition. Indeed, reliance on Miller's definition would imply that a message with no evidence would be difficult to create, and the control message would not be a no evidence condition. These results could indicate that explanation is generally as effective as other forms of evidence. If that is true, the explanation that was included in all of the messages could have contributed to covering up some of the variation that might otherwise have occurred. Again, further study would be necessary to determine which explanation is correct.

Re-Categorization of the Data

As explained in Chapter Three, re-categorization of the data was

designed to point toward directions for further research by examining the nature of the evidence--attitude or evidence--belief relationship. The hypotheses for this study and the guidelines theorists have offered to would-be persuaders have presumed that evidence for a claim is evaluated before the claim itself is accepted or rejected. It was thought that the evaluation of the evidence would affect the corresponding belief in claims or attitude change in a uni-directional, temporally ordered manner. The re-categorization of the data was based on the possibility that this view was incorrect, and that attitudes or beliefs about the claims could affect evaluation of the evidence. This could explain the difference in perceptions of the evidence in the messages from the pilot test to the main study.

The results of the ANOVA procedure conducted on the re-categorized data led to results which tend to support the modified view of evidence's role in persuasion. Of course, no hypotheses were generated dealing with this issue, and these data were not designed to test a modified approach, but they can be used to explain the absence of significant results in the main study and to point toward directions for further research.

THE ANOVA of the re-categorized data found that evidence which subjects perceived as relevant had more persuasive effect than evidence subjects perceived as irrelevant for four of the six questions. This would point toward relevance as an important factor for evidence in persuasion, but it does not point to any consensus about what constitutes evidence relevance or irrelevance.

Evidence which subjects perceived as strong had more persuasive effect than evidence that was perceived as weak for questions one and three. While unequivocal support for evidence strength (as perceived by subjects) as a major factor does not exist, the trend indicates it may be a concern in some instances. Again, the data does not indicate that there is any consensus about what constitutes evidence strength or weakness.

The T-test conducted on the re-categorized data yielded significant results for seven of the forty-eight comparisons. Strong relevant statistics were more persuasive than the control message for questions one and four. Strong relevant testimony was more persuasive than the control message for questions three and four. Weak irrelevant testimony was less persuasive than the control message for questions one, three, and six. While these results support a trend in the right direction, significant results in only seven of forty-eight comparisons do not lead to the conclusion that the evidence manipulations produced general overall differences from the simple explanation found in the control cell message.

These results could indicate that attitudes or beliefs cause subjects to perceive evidence validity differently. The fact that subjects were asked to commit to their positions on the claims about the Energaire prior to evaluating the evidence could have led to that process. These results could be explained by the modified persuasive process developed above. However, these results do not necessarily support the concept of the persuasive process between evidence and beliefs or

attitudes being a two-way procedure.

It would also be that the criteria selected for use in this study as measures of strength and relevance were rejected by subjects. Indeed, comments on the questionnaire about evidence would indicate that is true. The determination of evidence strength and weakness and evidence relevance and irrelevance may vary from individual to individual such that it is not possible to identify commonly held agreement on what are or are not appropriate criteria. The wide disparity of evaluations of evidence strength and relevance could reflect this fact. It would still be possible for the persuasive process to operate from claim through evidence to end belief or attitude in a uni-directional manner if this were the true cause of the results from the re-categorized data. It is not possible to choose between these two options given the current study design, but it does seem that the criteria for evidence strength and relevance employed in the study are not those perceived to be the most appropriate ones by subjects.

Prior Knowledge

The T-tests conducted on the basis of whether or not subjects had heard of the Energair before were also not designed to test the study hypotheses, but it did raise questions about past research and part of the study design. Research discussed in Chapter One indicated that evidence new to subjects had the greatest chance of being persuasive. The findings from this research dealing with a relatively new product seem to run counter to that.

The results of the T-tests indicated that those with prior knowledge of the Energair responded significantly more favorably on three of the six questions, and the results on the other three questions followed that trend without reaching statistical significance. This seems plausible in dealing with a new product. It is reasonable to expect people to be skeptical of a new product making extreme claims, and it is reasonable for acceptance of that product to be enhanced by hearing about it over a period of time. One student had commented that she had heard of its use in hospitals, and that association could have added credibility to the product.

These findings affect the design of the main study in that an attempt was made to find a product new to subjects to try and enhance the persuasive effect. The results of this T-test indicate that just the reverse was happening. The effect of prior knowledge should not cause undue concern for the results of the study hypotheses, however, since those with prior knowledge were randomly distributed throughout the cells.

Problems With the Study

The study had a number of problems, many which have been referred to previously in this chapter. A summary of those problems and others is necessary to understand fully and evaluate the results of both sets of data analysis.

The first problem had to do with the messages themselves. As indicated above, subjects perceived the evidence manipulations as significantly different in the pilot test, but not in the manipulation check

of the main study. The possible causes and consequences of that have been discussed previously.

A problem that has not been mentioned prior to this is the issue of the Energaire. It was selected as a new product so that the evidence would be unfamiliar to subjects. Research discussed in Chapter One indicated that evidence was likely to have the greatest effect when it was new to subjects. Unfortunately, several products have become popular on the market that have claims similar to those of the Energaire. There are a number of products that claim to remove smoke and pollution from the air, but those generally do not claim better sleep and better work in addition. There may have been some confusion, however, due to the general similarity of the products. At least those claims were not likely to have been totally new to the subjects. Only twenty-six of the one hundred sixty subjects said they had heard of the Energaire before, and they were randomly distributed throughout the cells. Others indicated that they had heard of similar products, however.

A third problem with the study concerns the data analysis of the re-categorized data. The cell sizes were extremely unbalanced with a low of three and a high of thirty. Any examination and interpretation of the results of the data analysis run on the re-categorized data should take this into account.

Directions for Future Research

The role that evidence plays in the persuasive process has not been totally clarified yet. The results of this study indicate that evidence

can play an important role in persuasion, but the exact nature of that role still needs further clarification. The results of this study lead to questions that future research in this area should focus on.

The first area that deserves further examination deals with the criteria for what constitutes strong versus weak evidence and relevant versus irrelevant evidence. Subjects did not seem to accept or apply criteria drawn from the theoretical literature about evidence usage, but did seem to have some concepts of their own as evidenced by the re-categorized data. Search for and clarification of criteria that the general public employs in evaluating evidence strength and relevance would help the understanding of the role of evidence in the persuasive process.

The analysis of the re-categorized data indicated that subject perceptions of evidence relevance were a factor in the resulting persuasion for almost all of the questions. Subject perceptions of evidence strength were a factor in only one-third of the questions, but did seem to play some limited role in the persuasion process. This study did not clarify what standards subjects employed, but research in that direction would enable would-be persuaders to create messages that employed evidence with a better chance of accomplishing their persuasive goals.

A related type of research that could follow this study is one that examines other factors to determine any other criteria that are important in determining the persuasive effect of evidence. Relevance appeared to be an important factor in this study, and further research could examine other factors. For example, types of evidence other than testimony and

statistics could be examined. This could include evidence forms such as illustration, analogy, comparisons, visual evidence, etc. Other criteria for strength and weakness in evidence specific to each of those types of evidence could also be examined.

Other research could investigate the role that the topic of messages plays in the process of persuasion. This study dealt with a new product on the market whereas most past research has focused primarily on attitude change on a variety of issues. The product versus issue role could be explored. Some of the main study results suggested that there may be a difference in the persuasive effects of evidence depending upon the abstract or concrete nature of claims. That distinction could be explored further. Other research might focus on whether or not people paid more attention to evidence if the issue was important to them. A variety of subject matter variables such as these remain to be explored.

Research is also needed in determining how evidence operates in the persuasive process. In the discussion of the re-categorized data above it was suggested that the nature of the operation of evidence in persuasion is unclear. We do not know from the current research whether evidence evaluations precede attitude or belief change or whether attitudes and beliefs are changed due to other factors and perceptions of the evidence are a result of those attitudes or beliefs. Research that was focused on the nature of the relationship between individual's attitudes toward specific objects and their evaluation of the corresponding evidence could further illuminate the role of evidence in the persuasion

process.

Research from a slightly different perspective could also be useful. Part of the reason evidence analysis is included in so many argumentation and public speaking texts is to enable students to become better consumers of information. If students could learn to evaluate evidence clearly and properly then they could make better informed decisions on issues facing them. The tests of evidence presented are designed to be helpful aids in that process. Research could shift to an investigation of training procedures for proper evidence evaluation. It would be interesting and useful to find out if training in the evaluation of evidence would affect subjects' susceptibility to persuasion from different types of evidence differently than subjects without training. It would be useful to see if a variety of educational approaches in this area could indeed turn students into better consumers of information.

Evidence does appear to have a role to play in the process of persuasion, but greater clarification of that role is still very necessary in many areas. The results of this study led to several specific conclusions about evidence. The criteria drawn from theoretical literature for evidence strength and relevance do not seem to have consistent acceptance among subjects, yet the re-categorized data suggest that subjects do employ some version of those criteria in evaluating messages. According to the re-categorized data, evidence relevance seems to be a central concept to subjects in the persuasive process, although there is not consensus as to what constitutes relevant or irrelevant evidence. Evidence type and evidence strength seem to be factors in a much more

limited sense if at all. The results have also raised the question about the direction of the relationship between evidence and attitude change. The results of this study have added a few more pieces of information to the question of evidence's role in persuasion, but more research is required to understand the role completely.

APPENDIX A
STUDY MESSAGES

EXPLANATION (CONTROL CELL)

From the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightening from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

Claims about the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

STRONG RELEVANT TESTIMONY

From a staff worker for the Consumer Product Information Bureau.

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightening from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

My family and I tried the new product and our conclusions about the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

In a room, the Energaire air purifier fills it with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, my family and I are breathing cleaner, country fresh air all day long. To show this effect of ionized oxygen on smoke, I took the Energaire, blew

smoke into a clear bowl, and held the bowl inverted over the system. The smoke vanished. The charged air particles appeared to dissolve the smoke particles, precipitating them from the air.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans our room of odor causing bacteria and stale, musty, or polluted air. To illustrate this anti-pollution effect, I took the unit and placed it next to a wall. Then I put a large piece of paper on the wall. Within a few days I noticed how black the paper got. I found the black film to be finite carbon particulate matter--the same pollutants my family and I would normally breathe. By placing the unit in the center of a room or away from a wall, that same matter falls to the ground as dust.

At home, the Energaire allows my family and me to sleep better. We demonstrated this by placing one by each of our beds, and we saw how the negatively charged air allowed us to sleep easier, deeper, and more relaxed.

It also helps at work. Placing it on our desks allowed it to create a clear environment at work. We found we think more clearly, are more alert, and function better. We noticed the difference within one day.

WEAK RELEVANT TESTIMONY

From a staff worker for the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings, or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightning from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

My neighbor, who sells this new product, concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

He says the Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room he and his family breathe cleaner, country fresh air all day long. To show this effect of ionized oxygen on smoke, he says he took the Energaire, blew smoke into a clear bowl, and held the bowl inverted over the system. He says the smoke vanished. The charged air particles appeared to

dissolve the smoke particles, precipitating them from the air.

A trip to the mountains exposes people to nature's freshly ionized oxygen. My neighbor reports that the Energaire produces this same effect. It cleans his room of odor causing bacteria and stale, musty, or polluted air. To illustrate this anti-pollution effect, he told me he took the unit and placed it next to a wall. Then he put a large piece of paper on the wall. Within a few days he noticed how black the paper got. He said the black film was finite carbon particulate matter--the same pollutants he and his family would normally breathe. By placing the unit in the center of a room or away from a wall, he says that same matter falls to the ground as dust.

At home, he says the Energaire allows him and his family to sleep better. He demonstrated this by placing one by each of their beds and says the negatively charged air allowed them to sleep easier, deeper, and more relaxed.

He also says it helps them at work. Placing it on each of their desks allows it to create a clear environment at work. They found they think more clearly, are more alert, and function better. They noticed the difference within one day.

STRONG IRRELEVANT TESTIMONY

From a staff worker for the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightning from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

My family and I tried the new product and our conclusions about the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

In a room, the Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, my family and I are breathing cleaner, country fresh air all day long. To show this effect of ionized oxygen on smoke, I observed by family sitting in our living room before the unit was present, and they were

listless and frowning. After the Energaire was present in the room, my family and I were livelier and happier.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans our room of odor causing bacteria and stale, musty, or polluted air. To illustrate this anti-pollution effect of the unit, I surveyed our family room. It was very messy before the Energaire was present with papers strewn around, playing cards scattered, and generally untidy. Within a few days of placing the unit in the room, I noticed how neat it had become. The papers were stacked neatly, the cards were put away, and it was generally in order.

At home the Energaire allows my family and me to sleep better. We demonstrated this enhanced sleep effect of negatively charged air by placing one by each of our beds. We noticed how tidy the previously messy bedrooms had become.

It also helps us at work. To show the Energaire's effect on our thinking and efficiency at work, we each placed one on our desks. We all noticed how it enhanced the appearance of our offices within one day.

WEAK IRRELEVANT TESTIMONY

From a staff worker for the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightning from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

My neighbor, who sells this new product, concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

He says the Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, he and his family breathe cleaner, country fresh air all day long. To show this effect of ionized oxygen on smoke, he says he observed his family sitting in their living room before the unit was present, and they were listless and frowning. After the Energaire was present in the room he

reported they were livelier and happier.

A trip to the mountains exposes people to nature's freshly ionized oxygen. My neighbor decided the Energaire produces this same effect. It cleans his room of odor causing bacteria and stale, musty, or polluted air. To illustrate the anti-pollution effect of the unit, he surveyed his family room. It was very messy before the Energaire was present with papers strewn around, playing cards scattered, and generally untidy. Within a few days of placing the unit in the room, he noticed how neat it had become. The papers were stacked neatly, the cards were put away, and it was generally in order.

At home, he says the Energaire allows him and his family to sleep better. He demonstrated this enhanced sleep effect of negatively charged air by placing one by each of their beds. He noticed how tidy their previously messy bedrooms had become.

He also says it helps them at work. To show the Energaire's effect on their thinking and efficiency at work, he and his family each placed one on their desks. They noticed how it enhanced the appearance of their offices within one day.

STRONG RELEVANT STATISTICS

From the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightening from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

Research conducted by the Consumer Product Information Bureau staff over the past three years in a carefully selected random sampling of homes across the country concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

The Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, people breathe cleaner, country fresh air all day long. To show this effect on smoke, our researchers conducted a series of 150 timed tests that involved

blowing four cubic inches of smoke into a bowl and holding it inverted over the system. The smoke vanished in 0.8 seconds. The charged air particles appeared to dissolve the smoke particles, precipitating them from the air.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans rooms of odor causing bacteria and stale, musty, or polluted air. To illustrate this anti-pollution effect, our researchers placed the unit next to a wall in 2000 homes carefully selected to constitute a random sample across the country. They put a large piece of paper on the wall next to the unit. Within three days they found five ounces of black film on the paper. The black film turned out to be finite carbon particulate matter--the same pollutants that would normally be breathed. By placing the unit in the center of a room or away from a wall, that same matter falls to the ground as dust.

In homes the Energaire allows better sleep. This was demonstrated in our research labs, where 120 carefully selected subjects had their sleep patterns evaluated for two months with the Energaire in their room and two months without it. The negatively charged air allowed 70 percent of the subjects to fall asleep 12 percent easier, their sleep was 17 percent deeper, and muscle tests showed they were 20 percent more relaxed.

It also helps at work. Carefully conducted surveys in 100 different companies across the country concluded that over 78 percent of workers felt they thought more clearly and were more alert. Sixty-three

percent performed better on sample work tasks when an Energaire was present.

WEAK RELEVANT STATISTICS

From the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightning from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

Research conducted by the Consumer Product Information Bureau staff over the past three years in a sampling of homes concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

The Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, people breathe cleaner, country fresh air all day long. To show this effect, our researchers conducted a series of 8 timed tests that involved blowing four

cubic inches of smoke into a bowl and holding it inverted over the system. The smoke vanished in 0.8 seconds. The charged air particles appeared to dissolve the smoke particles, precipitating them from the air.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans rooms of odor causing bacteria, and stale, musty, or polluted air. To illustrate this, our researchers placed the unit next to a wall in 15 homes. They put a large piece of paper on the wall next to the unit. Within six days, they found five ounces of black film on the paper. The black film turned out to be finite carbon particulate matter--the same pollutants that would normally be breathed. By placing the unit in the center of a room or away from a wall, that same matter falls to the ground as dust,

In homes, the Energaire allows better sleep. This was demonstrated in our research labs where 10 subjects had their sleep patterns evaluated for one week with the Energaire in their room. The negatively charged air allowed 70 percent of the subjects to fall asleep approximately 12 percent easier, their sleep was 17 percent deeper, and they reportedly felt 20 percent more relaxed.

It also helps at work. Surveys in 8 different companies concluded that over 78 percent of workers felt they thought more clearly and were more alert, and 63 percent performed better on sample work tasks when an Energaire was present.

STRONG IRRELEVANT STATISTICS

From the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightening from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

Research conducted by the Consumer Product Information Bureau staff over the past three years in a carefully selected random sampling of homes across the country concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

The Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, people breathe cleaner, country fresh air all day long. To show this effect on smoke, our researchers conducted a series of 150 timed tests with people in a

sample living room. Before the machine was in the living room, the three randomly selected people in each test were listless and frowning. Within 10 minutes after the Energaire was present in this setting, the people were 38 percent livelier and 17 percent happier.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans rooms of odor causing bacteria and stale, musty, or polluted air. To illustrate this anti-pollution effect, our researchers investigated 2000 homes carefully selected to constitute a random sample across the country. They found messy family rooms before the unit was present with papers strewn around, playing cards scattered and generally untidy conditions. Within three days of placing the unit in the home, they found the rooms had become 63 percent neater.

In homes, the Energaire allows better sleep. This was demonstrated in our research labs where 120 carefully selected subjects had their bedroom housekeeping patterns evaluated for two months with the Energaire in their room and two months without it. The negatively charged air of the Energaire allowed 70 percent of the subjects to keep their bedrooms 39 percent cleaner.

It also helps at work. To illustrate the efficiency of workers using the Energaire, surveys were carefully conducted in 100 different companies across the country. The Energaire was placed on workers' desks, and over 78 percent of the workers noticed how it enhanced the appearance of their offices within one day.

WEAK IRRELEVANT STATISTICS

From the Consumer Product Information Bureau:

It has been observed that air quality can actually affect moods, feelings and people's sense of well being. Air that is positively charged caused people to be depressed, moody and tired. Negatively charged air made people feel good. Air that is positively charged is found in air conditioned buildings or in a polluted environment. Ionized oxygen (negatively charged air) exists after a thunderstorm. The lightening from the storm adds a small negatively charged electron to each oxygen molecule in a process called ionization.

Looking for a way to turn positively charged air into negatively charged air, the negative ion generator was developed--a product that produces negatively charged particles that attach themselves to air molecules. The new product is an ionized oxygen generator called the Energaire air purifier. The copper mesh fuzz on top of the unit is one of the secrets of the system.

Research conducted by the Consumer Product Information Bureau staff over the past three weeks in a sampling of homes concluded that the Energaire's benefits include removing smoke from the air, removing pollution from the air, better sleep, and clearer and more alert thinking at work.

The Energaire air purifier fills a room with oxygen ions and cleans and purifies the air so that even in a smoke-filled room, people breathe cleaner, country fresh air all day long. To show this effect on smoke, our researchers conducted a series of 8 timed tests with people in a

sample living room. Before the machine was in the living room, the three people in each test were listless and frowning. Within 30 minutes after the Energaire was present in this setting, the people were 38 percent livelier and 17 percent happier.

A trip to the mountains exposes people to nature's freshly ionized oxygen. The Energaire produces this same effect. It cleans rooms of odor causing bacteria and stale, musty or polluted air. To illustrate this anti-pollution effect, our researchers investigated 15 homes. They found messy family rooms before the unit was present with papers strewn around, playing cards scattered and generally untidy conditions. Within six days of placing the unit in the home, they found the rooms had become 63 percent neater.

In homes, the Energaire allows better sleep. This was demonstrated in our research labs where 10 subjects had their bedroom housekeeping patterns evaluated for one week with the Energaire in their room. The negatively charged air of the Energaire allowed 70 percent of the subjects to keep their bedrooms 39 percent cleaner.

It also helps at work. To illustrate the efficiency of workers using the Energaire, surveys were conducted in 8 different companies. The Energaire was placed on workers' desks, and over 78 percent of the workers noticed how it enhanced the appearance of their office within four days.

APPENDIX B
PILOT TEST INFORMATION AND QUESTIONNAIRE

CONSENT STATEMENT

The Department of Communication supports the practice of protection for human subjects participating in research. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate you are free to withdraw at any time.

You will be asked to read several messages about a product, and then answer some questions about the kinds of evidence contained in the messages.

Your participation is solicited, but strictly voluntary. Do not hesitate to ask any questions about the study. Be assured that your name will not be associated in any way with the research findings. I appreciate your cooperation very much.

Sincerely,

Marjorie Keeshan Nadler

Principle Investigator

691-7919

(Signature of subject agreeing to participate.)

INSTRUCTIONS

The messages you are about to read are designed to represent forms of evidence. You will be asked to identify the main type of evidence present in the message and then apply several tests to that evidence.

Evidence has been defined as ". . . those data that are intended to induce a sense of belief in the proposition which the data purportedly support."

Thus, in the messages you will find claims made followed by evidence to support them.

Please read the first message and answer the three questions following it. Then read the next message and answer the three questions following it.

The first decision you need to make is the main type of evidence contained in the message.

TESTIMONY refers to evidence in the forms of opinions or conclusions drawn by the author of the message. These opinions or conclusions can be personal - drawn by the author - or by reference to opinions or conclusions of others.

STATISTICS are figures which indicate relationships among phenomena or which summarize and interpret bodies of data; they express facts in numerical form.

Which type of evidence was the main type in this message?

Testimony _____

Statistics _____

Comments:

The test of relevancy asks the question, "Does the data support the conclusions it is asserted to support?" This test suggests that the data can be credible in every other respect but may still be an insufficient basis for argument because it is tangent to the conclusion being forwarded. If, for example, a person claimed that a particular beverage tasted good and offered evidence that he/she had lost weight while drinking that beverage, the evidence (lost weight) would be irrelevant to the claim (the good taste of the beverage).

Without regard to the strength or weakness of the evidence, and applying the above criteria, was the evidence in this message relevant to the claims being made?

Relevant _____

Irrelevant _____

Comments:

Evidence can also be classified as being strong or weak according to criteria available for each type. Of course, relevancy is a criterion for strength or weakness of any kind of evidence, but the following tests should be applied without regard to the relevancy or irrelevancy of the evidence. Please skip to the criteria for the main type of evidence you identified above, and indicate whether or not the evidence in this message is strong according to the criteria below:

STRONG TESTIMONY CRITERIA:

The person testifying should be reasonable unbiased.

The person testifying should be in a position to examine the relevant facts at first hand.

Strong Testimony _____

Weak Testimony _____

Comments:

STRONG STATISTICS CRITERIA:

The statistics should be based upon adequate sampling techniques.

If a sample does not adequately represent all of the elements within a class, the resultant statistic will be quite misleading. A survey of medical financing in the city of Baltimore seemed to support the claim that failure to receive adequate medical care was not related to ability to pay. When the survey techniques underlying the study were examined they discovered that all people earning less than the national median income had been excluded from the survey sample. An unrepresentative sample made the survey invalid.

The statistics should cover an appropriate time period.

Many times statistics are used to describe a situation over a given period of time. It then becomes critical to know whether the time period selected is appropriate for the purposes at hand. In measuring concepts like economic growth, inflation, and employment, the selection of base years and the length of time measured can have a significant effect upon the impression created by the statistic.

Weak Statistics _____

Strong Statistics _____

Comments:

APPENDIX C
MAIN STUDY INFORMATION AND QUESTIONNAIRES

CONSENT STATEMENT

The Department of Communication supports the practice of protection for human subjects participating in research. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate you are free to withdraw at any time.

You will be asked to read a message about a product, and then answer some questions about your reaction to the product described in the message.

Your participation is solicited, but strictly voluntary. Do not hesitate to ask any questions about the study. Be assured that your name will not be associated in any way with the research findings. I appreciate your cooperation very much.

Sincerely,

Marjorie Keeshan Nadler
Principle Investigator
691-7919

(Signature of subject agreeing to participate.)

QUESTIONNAIRE

1. Would you consider buying an Energaire?
Definitely not _____ Definitely
 2. Do you think the Energaire removes smoke from the air?
Definitely _____ Definitely not
 3. Do you think the Energaire removes pollution from the air?
Definitely not _____ Definitely
 4. Do you think the Energaire helps people sleep better?
Definitely _____ Definitely not
 5. Do you think the Energaire helps people to think more clearly and
be more alert at work?
Definitely not _____ Definitely
 6. How much would you be willing to pay for an Energaire?
0 - \$30 _____ \$31 - \$60 _____ \$61 - \$90 _____ \$91 - \$120 _____
\$121 - \$150 _____ \$151 - \$180 _____
 7. Had you ever heard about an Energaire before?
Yes _____ No _____
 8. Sex: Male _____ Female _____
 9. Level in school:
Freshman _____ Sophomore _____ Junior _____ Senior _____
 10. Age: _____
- Comments:

The first decision you need to make is the main type of evidence contained in the message.

TESTIMONY refers to evidence in the forms of opinions or conclusions drawn by the author of the message. These opinions or conclusions can be personal - drawn by the author - or by reference to opinions or conclusions of others.

STATISTICS are figures which indicate relationships among phenomena or which summarize and interpret bodies of data; they express facts in numerical form.

Which type of evidence was the main type in this message?

Testimony _____

Statistics _____

Comments:

The test of relevancy ask the question, "Does the data support the conclusions it is asserted to support?" This test suggests that the data can be credible in every other respect but may still be an insufficient basis for argument because it is tangent to the conclusion being forwarded. If, for example, a person claimed that a particular beverage tasted good and offered evidence that he/she had lost weight while drinking that beverage, the evidence (lost weight) would be irrelevant to the claim (the good taste of the beverage).

Without regard to the strength or weakness of the evidence, and applying the above criteria, was the evidence in this message relevant to the claims being made?

Relevant _____

Irrelevant _____

Comments:

Evidence can also be classified as being strong or weak according to criteria available for each type. Of course, relevancy is a criterion for strength or weakness of any kind of evidence, but the following tests should be applied without regard to the relevancy or irrelevancy of the evidence. Please skip to the criteria for the main type of evidence you identified above, and indicate whether or not the evidence in this message is strong according to the criteria below.

STRONG TESTIMONY CRITERIA:

The person testifying should be reasonably unbiased.

The person testifying should be in a position to examine the relevant facts at first hand.

Strong Testimony _____

Weak Testimony _____

Comments:

STRONG STATISTICS CRITERIA:

The statistics should be based upon adequate sampling techniques.

If a sample does not adequately represent all of the elements within a class, the resultant statistic will be quite misleading. A survey of medical financing in the city of Baltimore seemed to support the claim that failure to receive adequate medical care was not related to ability to pay. When the survey techniques underlying the study were examined they discovered that all people earning less than the national median income had been excluded from the survey sample. An unrepresentative sample made the survey invalid.

The statistics should cover an appropriate time period.

Many times statistics are used to describe a situation over a given period of time. It then becomes critical to know whether the time period selected is appropriate for the purposes at hand. In measuring concepts like economic growth, inflation, and employment, the selection of base years and the length of time measured can have a significant effect upon the impression created by the statistic.

Weak Statistics _____

Strong Statistics _____

Comments:

APPENDIX D
TABLES OF RESULTS

TABLE ONE
 χ^2 DISTRIBUTION FOR PILOT TEST

	STATISTICS (ST)	TESTIMONY (T)
STRONG (S)	RELEVANT (R)	T-19, V-1, ST-0
		S-11, W-9
		R-17, I-3
	IRRELEVANT (I)	T-20, V-0, ST-0
		S-7, W-13
		R-11, I-9
WEAK (W)	RELEVANT (R)	T-20, V-0, ST-0
		S-5, W-15
		R-16, I-4
	IRRELEVANT (I)	T-19, V-1, ST-0
		S-2, W-18
		R-8, I-12
VISUAL (V)		

TABLE TWO
ANOVA OF QUESTION ONE:
"Would you consider buying an Energaire?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	3.600	1	3.600	1.048	.308
Relevance (B)	9.025	1	9.025	2.626	.107
Evidence (C)	21.025	1	21.025	6.119	.014*
A X B	.100	1	.100	.029	.865
A X C	.400	1	.400	.116	.733
B X C	1.225	1	1.225	.357	.551
A X B X C	.100	1	.100	.029	.865
Within Groups	522.296	152	3.436		
Total	557.771	159	3.508		

* Indicates results were significant at the .05 level

TABLE THREE

ANOVA OF QUESTION TWO:

"Do you think the Energaire removes smoke from the air?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	.225	1	.225	.074	.786
Relevance (B)	16.900	1	16.900	5.569	.020*
Evidence (C)	.625	1	.625	.206	.651
A X B	3.600	1	3.600	1.186	.278
A X C	.225	1	.225	.074	.786
B X C	.900	1	.900	.297	.587
A X B X C	.000	1	.000	.000	1.000
Within Groups	461.296	152	3.035		
Total	483.771	159	3.043		

* Indicates results were significant at the .05 level

TABLE FOUR

ANOVA OF QUESTION THREE:

"Do you think the Energaire removes pollution from the air?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	2.500	1	2.500	.792	.375
Relevance (B)	19.600	1	19.600	6.212	.014*
Evidence (C)	3.600	1	3.600	1.141	.287
A X B	.400	1	.400	.127	.722
A X C	.000	1	.000	.000	1.000
B X C	.900	1	.900	.285	.594
A X B X C	2.500	1	2.500	.792	.375
Within Groups	479.597	152	3.155		
Total	509.097	159	3.202		

* Indicates results were significant at the .05 level

TABLE FIVE

ANOVA OF QUESTION FOUR:

"Do you think the Energaire helps people sleep better?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	3.025	1	3.025	1.038	.310
Relevance (B)	3.025	1	3.025	1.038	.310
Evidence (C)	18.225	1	18.225	6.253	.013*
A X B	.225	1	.225	.077	.782
A X C	2.025	1	2.025	.695	.406
B X C	4.225	1	4.225	1.450	.230
A X B X C	.225	1	.225	.077	.782
Within Groups	442.997	152	2.914		
Total	473.972	159	2.981		

* Indicates results were significant at the .05 level

TABLE SIX
ANOVA OF QUESTION FIVE:

"Do you think the Energaire helps people to think more clearly and be more alert at work?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	3.025	1	3.025	.986	.322
Relevance (B)	7.225	1	7.225	2.355	.127
Evidence (C)	8.100	1	8.100	2.640	.106
A X B	.400	1	.400	.130	.719
A X C	.025	1	.025	.008	.928
B X C	.625	1	.625	.204	.652
A X B X C	12.100	1	12.100	3.943	.049*
Within Groups	466.397	152	3.068		
Total	497.897	159	3.131		

* Indicates results were significant at the .05 level

TABLE SEVEN

ANOVA OF QUESTION SIX:

"How much would you be willing to pay for an Energaire?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	1.600	1	1.600	1.608	.207
Relevance (B)	.225	1	.225	.226	.635
Evidence (C)	3.025	1	3.025	3.041	.083
A X B	.100	1	.100	.101	.752
A X C	.400	1	.400	.402	.527
B X C	.225	1	.225	.226	.635
A X B X C	.000	1	.000	.000	1.000
Within Groups	151.199	152	.995		
Total	156.774	159	.986		

TABLE EIGHT

T-TEST OF STRONG RELEVANT STATISTICS AND CONTROL

<u>Question</u>	<u>T Value</u>	<u>Degrees of Freedom</u>	<u>2-Tailed Probability</u>
One	1.79	38	.082
Two	.72	38	.475
Three	1.24	38	.222
Four	1.86	38	.070
Five	2.45	38	.019*
Six	.14	38	.891

* Indicates results were significant at the .05 level

TABLE NINE

T-TEST OF STRONG RELEVANT TESTIMONY AND CONTROL

<u>Question</u>	<u>T Value</u>	<u>Degrees of Freedom</u>	<u>2-Tailed Probability</u>
One	-.08	38	.933
Two	.66	38	.513
Three	.44	38	.659
Four	.58	38	.567
Five	.29	38	.776
Six	-1.16	38	.255

TABLE TEN

T-TEST OF STRONG IRRELEVANT STATISTICS AND CONTROL

<u>Question</u>	<u>T Value</u>	<u>Degrees of Freedom</u>	<u>2-Tailed Probability</u>
One	.62	38	.540
Two	.39	38	.698
Three	-.10	38	.922
Four	1.01	38	.320
Five	.19	38	.853
Six	-.38	38	.705

TABLE ELEVEN

T-TEST OF STRONG IRRELEVANT TESTIMONY AND CONTROL

<u>Question</u>	<u>T Value</u>	<u>Degrees of Freedom</u>	<u>2-Tailed Probability</u>
One	-.45	38	.653
Two	-.28	38	.784
Three	-.47	38	.639
Four	.76	38	.450
Five	.59	38	.560
Six	-1.22	38	.228

TABLE TWELVE

T-TEST OF WEAK RELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	1.16	38	.253
Two	1.03	38	.311
Three	.46	38	.651
Four	2.51	38	.016*
Five	.73	38	.472
Six	.25	38	.802

* Indicates results were significant at the .05 level

TABLE THIRTEEN

T-TEST OF WEAK RELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-.23	38	.820
Two	1.24	38	.223
Three	.65	38	.523
Four	-.34	38	.734
Five	.62	38	.541
Six	-.35	38	.726

TABLE FOURTEEN

T-TEST OF WEAK IRRELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-.09	38	.932
Two	-.52	38	.606
Three	-.32	38	.751
Four	.67	38	.507
Five	.79	38	.433
Six	.00	38	1.000

TABLE FIFTEEN

T-TEST OF WEAK IRRELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-.96	38	.343
Two	-.78	38	.437
Three	-1.62	38	.113
Four	-.28	38	.778
Five	-.76	38	.453
Six	-.23	38	.817

TABLE SIXTEEN

 χ^2 DISTRIBUTION FOR MAIN STUDY MANIPULATION CHECK

		STATISTICS (ST)	TESTIMONY (T)
STRONG (S)	RELEVANT (R)	T-5, ST-15	T-18, ST-2
		S-8, W-12	S-8, W-2
		R-15, I-5	R-13, I-7
	IRRELEVANT (I)	T-9, ST-11	T-19, ST-1
		S-7, W-13	S-8, W-12
		R-15, I-5	R-7, I-13
WEAK (W)	RELEVANT (R)	T-8, ST-12	T-17, ST-3
		S-4, W-16	S-3, W-17
		R-14, I-6	R-13, I-7
	IRRELEVANT (I)	T-8, ST-12	T-20, ST-0
		S-7, W-13	S-8, W-12
		R-9, I-11	R-10, I-10

TABLE SEVENTEEN
ANOVA OF RE-CATEGORIZED DATA FOR QUESTION ONE
"Would you consider buying an Energaire?"

Source of Variation	Sum of Squares	DF	Square	F	Significance of F
Between Groups					
Strength (A)	21.176	1	21.176	7.551	.007*
Relevance (B)	28.847	1	28.847	10.287	.002*
Evidence (C)	5.740	1	5.740	2.047	.155
A X B	.260	1	.260	.093	.761
A X C	.553	1	.553	.197	.658
B X C	.162	1	.162	.058	.810
A X B X C	.749	1	.749	.267	.606
Within Groups	426.246	152	2.804		
Total	552.851	159	3.477		

* Indicates results were significant at the .05 level

TABLE EIGHTEEN

ANOVA OF RE-CATEGORIZED DATA FOR QUESTION TWO

"Do you think the Energaire removes smoke from the air?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	3.400	1	3.400	1.267	.262
Relevance (B)	37.333	1	37.333	13.906	.000*
Evidence (C)	.002	1	.002	.001	.976
A X B	.282	1	.282	.105	.746
A X C	.120	1	.120	.045	.833
B X C	.186	1	.186	.069	.793
A X B X C	.004	1	.004	.002	.969
Within Groups	408.059	152	2.685		
Total	483.772	159	3.043		

* Indicates results were significant at the .05 level

TABLE NINETEEN

ANOVA OF RE-CATEGORIZED DATA FOR QUESTION THREE

"Do you think the Energair removes pollution from the air?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	17.591	1	17.591	6.074	.015*
Relevance (B)	10.930	1	10.930	3.774	.054
Evidence (C)	.752	1	.752	.260	.611
A X B	1.500	1	1.500	.518	.473
A X C	1.356	1	1.356	.468	.495
B X C	3.468	1	3.468	1.198	.276
A X B X C	.000	1	.000	.000	.990
Within Groups	440.229	152	2.896		
Total	513.741	159	3.231		

* Indicates results were significant at the .05 level

TABLE TWENTY

ANOVA OF RE-CATEGORIZED DATA FOR QUESTION FOUR

"Do you think the Energaire helps people sleep better?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	8.220	1	8.220	3.038	.083
Relevance (B)	10.547	1	10.547	3.898	.050*
Evidence (C)	7.335	1	7.335	2.711	.102
A X B	4.023	1	4.023	1.487	.225
A X C	.393	1	.393	.145	.704
B X C	.283	1	.283	.105	.747
A X B X C	.055	1	.055	.020	.887
Within Groups	411.264	152	2.706		
Total	473.997	159	2.981		

* Indicates results were significant at the .05 level

TABLE TWENTY-ONE

ANOVA OF RE-CATEGORIZED DATA FOR QUESTION FIVE

"Do you think the Energaire helps people to think more clearly and be more alert at work?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	3.176	1	3.176	1.068	.303
Relevance (B)	15.051	1	15.051	5.060	.026*
Evidence (C)	1.016	1	1.016	.342	.560
A X B	.173	1	.173	.058	.810
A X C	.887	1	.887	.298	.586
B X C	.018	1	.018	.006	.939
A X B X C	1.746	1	1.746	.587	.445
Within Groups	452.156	152	2.975		
Total	497.897	159	3.131		

* Indicates results were significant at the .05 level

TABLE TWENTY-TWO

ANOVA OF RE-CATEGORIZED DATA FOR QUESTION SIX

"How much would you be willing to pay for an Energaire?"

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Between Groups					
Strength (A)	.328	1	.328	.343	.559
Relevance (B)	3.037	1	3.037	3.173	.077
Evidence (C)	1.907	1	1.907	1.992	.160
A X B	1.255	1	1.255	1.311	.254
A X C	.467	1	.467	.488	.486
B X C	3.638	1	3.638	3.801	.053
A X B X C	.033	1	.033	.035	.853
Within Groups	145.486	152	.957		
Total	159.192	159	1.001		

TABLE TWENTY-THREE

T-TEST OF RE-CATEGORIZED STRONG RELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	2.92	42	.006*
Two	1.93	42	.060
Three	1.16	42	.253
Four	2.84	42	.007*
Five	2.00	42	.052
Six	.07	42	.945

* Indicates results were significant at the .05 level

TABLE TWENTY-FOUR

T-TEST OF RE-CATEGORIZED STRONG RELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	1.86	36	.071
Two	1.99	36	.054
Three	2.11	36	.042*
Four	2.19	36	.035*
Five	1.38	36	.175
Six	.58	36	.563

* Indicates results were significant at the .05 level

TABLE TWENTY-FIVE

T-TEST OF RE-CATEGORIZED STRONG IRRELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	.14	21	.890
Two	-.34	21	.737
Three	.58	21	.566
Four	.42	21	.676
Five	-.12	21	.907
Six	-.22	21	.831

TABLE TWENTY-SIX

T-TEST OF RE-CATEGORIZED STRONG IRRELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-.15	26	.882
Two	-.71	26	.485
Three	.28	26	.778
Four	-.17	26	.866
Five	.27	26	.787
Six	-1.41	26	.171

TABLE TWENTY-SEVEN

T-TEST OF RE-CATEGORIZED WEAK RELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	.79	48	.434
Two	.87	48	.388
Three	.43	48	.672
Four	1.18	48	.244
Five	1.23	48	.224
Six	-.24	48	.812

TABLE TWENTY-EIGHT

T-TEST OF RE-CATEGORIZED WEAK RELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-.02	43	.986
Two	1.09	43	.282
Three	.31	43	.757
Four	-.08	43	.934
Five	.83	43	.409
Six	-.33	43	.742

TABLE TWENTY-NINE

T-TEST OF RE-CATEGORIZED WEAK IRRELEVANT STATISTICS AND CONTROL

Question	T Value	Degrees of Freedom	2 Tailed Probability
One	-.72	41	.478
Two	-1.47	41	.150
Three	-.71	41	.479
Four	.76	41	.450
Five	.13	41	.894
Six	.17	41	.864

TABLE THIRTY

T-TEST OF RE-CATEGORIZED WEAK IRRELEVANT TESTIMONY AND CONTROL

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	-2.42	47	.019*
Two	-1.39	47	.170
Three	-2.54	47	.014*
Four	-.88	47	.385
Five	-1.16	47	.251
Six	-2.12	47	.039*

* Indicates results were significant at the .05 level

TABLE THIRTY-ONE
T-TEST FOR PRIOR KNOWLEDGE

Question	T Value	Degrees of Freedom	2-Tailed Probability
One	2.56	158	.011*
Two	1.08	158	.282
Three	2.25	158	.026*
Four	1.83	158	.068
Five	2.57	158	.011*
Six	.32	158	.751

* Indicates results were significant at the .05 level

APPENDIX E
BIBLIOGRAPHY

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