

Meta-Analysis Comparing the Persuasiveness of One-sided and Two-sided Messages

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A meta-analysis comparing the persuasiveness of one-sided and two-sided messages was conducted. Based on the Elaboration Likelihood Model it was hypothesized that audience favorability would moderate the effectiveness of the messages. However, the Discounting Hypothesis predicted increased persuasiveness for the two-sided message. The analysis indicated the existence of two types of operationalizations for two-sided messages (refutational and nonrefutational). The results demonstrate that a two-sided message with refutation is more persuasive than a one-sided message while a one-sided message is more persuasive than a two-sided message without refutation. The findings are inconsistent with the ELM but consistent with the Discounting Hypothesis.

ARISTOTLE, IN HIS BOOK *The Rhetoric* (1932), discussed how a speaker should refute the counterarguments of an opponent. An enduring concern of students in public speaking and persuasion is whether a communicator should address potential counterarguments when advancing any thesis. Aristotle assumed that any good public communicator would want to handle opposing arguments. The book's treatment advised how best to incorporate the responses into a presentation. However, his examples and forums are interactive (courts and deliberative bodies) where the speaker is speaking after or prior to the opposing side. Aristotle devoted little attention to those settings where the opposing side is not immediately present.

Apart from any consideration of a particular strategy to address existing counterarguments, a more fundamental question exists for a communicator. Should a communicator consider potential counterarguments and include a refutation of them when formulating or organizing a speech? A one-sided message will be defined as a message that presents only those arguments in favor of a particular proposition. A two-sided message presents the arguments in favor of a proposition but also considers the opposing arguments. Every communicator engaged in creating a persuasive message must decide whether to consider opposing viewpoints.

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THEORETICAL EXPLANATIONS OF MESSAGE SIDEDNESS EFFECTS

The underlying explanations for expecting differential effects between one- and two-sided messages takes a variety of forms. The two explanations receiving attention are the Elaboration Likelihood Model and the Discounting Hypothesis. The Elaboration Likelihood Model (ELM) explains attitude change in terms of cognitive elaboration (Petty & Cacioppo, 1981, 1986). The Discounting Hypothesis bases an explanation on the cognitive experiences of message receivers (Smith, 1984).

Elaboration Likelihood Model

The ELM argues that permanent attitude change results from cognitive elaborations made by the audience after receiving a message (Petty & Cacioppo, 1981, 1986). Elements of the situation work to inhibit or promote elaboration of message content. Message sidedness is not generally linked to the workings of the ELM as Petty and Cacioppo note (1986). Sidedness of a message is linked to the theory when, "motivation and ability to think about the issue will determine the route to persuasion" (p. 215). Certain situations, like exposing an audience to a message advocating a hostile position should increase their desire to process a message (Petty & Cacioppo, 1986) and to scrutinize the content. A two-sided message is more persuasive (than a one-sided message) under these conditions because the content appears well-informed and admits that the reason for the audience hostility is rational but not acceptable because a superior set of reasoning exists. The one-sided message is superior for a favorable audience because the message focuses on the agreeable arguments. Failure to mention possible counterarguments assures that the attention of the audience (and the cognitive processing of the audience) remains focused on the opinion advocated by the message sender. The two-sided or one-sided message under different conditions of audience favorableness will be more or less persuasive.

The ELM predicts that message sidedness has differing effects for audiences depending on factors relating to the motivation for processing information (e.g., audience favorableness toward the topic). The level of favorableness will vary from experiment to experiment as different audiences and different topics are selected. Such an inconsistency creates conditions that produce a set of heterogeneous effects across experiments comparing the effectiveness of one- and two-sided messages. The result is summarized in the following hypothesis:

Hypothesis 1: Results of message sidedness experiments will not demonstrate consistent and homogeneous results unless audience favorableness is considered:

- A. A one-sided message will be more persuasive for a favorable audience.

- B. A two-sided message will be more persuasive for an unfavorable audience.

Discounting Hypothesis

The Discounting hypothesis (Allen & Reynolds, 1989; Allen & Stiff, 1989; Smith, 1984) argues that a source who fails to meet an expectation or exceeds an expectation produces a reevaluation by an audience. For example, suppose a communicator thought to be fairminded, open, and honest addresses an audience on an issue known to be controversial. The communicator fails to acknowledge the existence of an opposing position. The audience may react negatively to the communicator and "discount" the opinion, whereas the two-sided message acknowledges the controversialness and increases the effectiveness of the communicator. For a noncontroversial topic, a communicator acknowledging the existence of possible counterpositions increases the image of honesty, fairmindedness, and expertise in the minds of the receivers. The advice according to this model would be to use a two-sided message.

The Discounting Hypothesis assumes that persuasion is based on some type of reaction to content. A communicator providing arguments and information on all sides of the issue demonstrates expertise, open-mindedness, and provides the basis for rational beliefs. The key to the effectiveness of the message is the refutational properties. The two-sided message examines the available counterarguments and, unlike the one-sided message, gives defenses to strengthen the beliefs. This perspective does not consider audience or topic variables, but based on a comparison of message strategies generates the following hypothesis:

Hypothesis 2: Results of message sidedness experiments will demonstrate consistent and homogeneous results favoring two-sided over one-sided messages.

METHODS

This report uses meta-analysis to test the two hypotheses about the effects of message sidedness. Meta-analysis is the process of quantitatively summarizing the available empirical data on an issue to estimate a common effect (Bangert-Drowns, 1986). Meta-analysis is an attempt to systematically, comprehensively, and quantitatively summarize available literature (Mintz, 1983; Preiss & Allen, in press). The superiority of meta-analysis to narrative summaries of experimental bodies of literature has been demonstrated (Cook & Leviton, 1980; Cooper & Rosenthal, 1980).

Literature Review

Relevant research materials were obtained by a computer search of *Psychological Abstracts*, a manual search of *Psychological Abstracts*, the

Social Sciences Citation Index, the *Index to Journals in Communication Studies Through 1985*, and by searching all of the references and bibliographies of located studies and reviews. To be included in this meta-analysis, a study had to compare the persuasiveness of a one-sided and a two-sided message.¹ A one-sided message was defined as a message presenting only those arguments in favor of the conclusion advocated by the communicator. A two-sided message was defined as a message including both the arguments in favor of and opposed to the conclusion advocated by the communicator. No study was unobtainable and no publication/nonpublication bias is evident in the data. All studies containing sufficient statistical information permitting the calculation of an effect size, in this case the correlation, are included in this report. Some studies lacked sufficient information (Skilbeck, Tulips, & Ley, 1977; Stainback & Rogers, 1983) or did not contain measures of attitude (Misra & Jain, 1971), dealt with messages used in repeated exposures (Insko, 1967; Thistlethwaite & Kamenetzky, 1955) or contained only a one-sided or two-sided message but not both (Janis & Feierabend, 1957; Sawyer, 1973; Settle & Golden, 1974; Smith & Hunt, 1978) and were excluded from the analysis.

Coding Procedures

Each study was coded for the relevant features for each hypothesis that would moderate the effect of message features. These features are a part of the hypotheses suggested by the theoretical perspectives and the earlier experiments. An examination of the actual experiments for information regarding the methodology provided the information necessary for the coding and evaluation of these features. Table 1 contains the summary information on each particular manuscript used in the analysis.

Type of two-sided message. In the existing experimental literature there exists two types of two-sided messages. Two-sided messages could be either refutational or non-refutational. Refutational two-sided messages were messages that mention counterarguments to the position advocated and then refute them. The intent is to introduce the contrary position and demonstrate why this position is inferior to the position advocated by the communicator. The other type of two-sided messages were considered nonrefutational. This message only mentioned the counterarguments without offering a refutation of them. The separation between types of two-sided messages is particularly relevant to the Discounting Hypothesis. The reason in Hypothesis 2 that the two-sided message was preferred was the ability of the message sender to consider and refute counterarguments. The nonrefutational message (according to the Discounting Hypothesis) should be less persuasive since it does not address the counterarguments. However, for the first hypothesis this should only make a difference *after* audience favorableness is considered.

TABLE 1
Overall Description of Available Data

Author of Study ^a	Date ^b	Content of Message
Belch	1981	Toothpaste Preferences
Bettinghaus	1969	Legalization of wiretapping
Chu	1967	Free Trade Zone
Dipboye	1971	Courtroom Trial
Dycus	1976	Army Contract Proposal
Etgar	1982	Advertisements
Fort	1991	Organ Donation Cards
Hass	1972	Socialize US Economy
Hilyard	1966	Abortion
Hovland	1949	How Long World War II Lasted
Jaksa	1963	Unionizing
Jones	1970	Criminal Trial Summaries
Kanungo	1975	Advertising
Kaplowitz	1985	Nuclear Freeze
Koballa	1984	Energy Conservation
Koehler	1968	Guaranteed Annual Income
Koyama	1981	Disabled Persons
Ley	1971	Weight Loss
Lumsdaine	1953	Civil Defense
McCroskey	1954	Local Control of Education
McGinnies	1969	Cuban Missile Crisis/sub visits
Paulson	1952	Voting Age
Rosnow	1968	Fraternities on Campus
Sinha	1971	Language of Instruction
Weston	1967	Civil Defense
Winkel	1984	Organ Donation Cards

^aFirst author listed only, see references for complete citation.

^bDate is for first exposure of the data. All later citations are provided in references that use same data set.

Audience favorableness. Hypothesis One predicts that audience favorability toward the topic would be a moderating feature necessary for this analysis. The favorability of the audience toward the conclusions advocated by the message source was coded for the studies. An audience was coded as favorable, unfavorable, or unknown. This is one variable that the ELM considers relevant to the motivation of an audience to process the message.

Statistical Analysis

The results of each study were converted to a common metric, the correlation coefficient, for averaging. The correlation coefficient is recommended particularly in the case of binary variables due to the ease of interpretation of the results (Hunter & Schmidt, 1990; Rosenthal, 1984, 1987). One alternative metric, Fisher's *z* transformation, does not contain the underestimation bias of the correlation coefficient. However,

the overestimation bias of Fisher's z is greater than the underestimation bias of the correlation coefficient and is therefore only recommended when the average sample per correlation is low *and* the number of estimates is low (Strube, 1988). The average sample size in these investigations is over 10 subjects and the number of investigations greater than five, so the untransformed correlation coefficient was used. However, the estimates of the correlations slightly underestimate the true correlation (ρ).

The form of meta-analysis used was the variance-centered meta-analysis, specifically the Schmidt-Hunter method (Bangert-Downs, 1986; Hunter & Schmidt, 1990; Hunter, Schmidt, & Jackson, 1982). Meta-analysis requires the extraction of statistical information from original reports of data, and subsequent conversion to a common metric, using formulas established for such transformations. Once converted, the correlations were averaged, weighting by the sample size of the study.

Once an average is established, the average correlation is tested for homogeneity. The test used is the Schmidt-Hunter test for moderators. The test estimates the expected amount of variance due to sampling error and compares that estimate with the observed amount of variance in the sample of correlations. If 75% or more of the variance can be attributed to sampling error, the estimates are considered homogeneous. If *less* than 75% of the variance can be attributed to sampling error, the estimates are considered heterogeneous and a moderator variable is probably present.

The Schmidt-Hunter procedure was selected because of its sensitivity to the existence of moderators. A great deal of concern has been raised about the possibility of message by treatment interactions existing in the persuasion literature (Hunter, Hamilton, & Allen, 1989; Jackson, O'Keefe, Jacobs, & Brashers, 1989). These interactions would create heterogeneity among the findings of a group of experiments. The Schmidt-Hunter technique has a high Type I error rate and should be considered an extremely liberal test for moderators (Alexander, Scozzaro, & Borodkin, 1989; Schmidt, Hunter, & Raju, 1988; Spector & Levine, 1987). If no moderator exists using this test, the moderator would not be found using the more conservative tests for moderators (Hedges & Olkin, 1985). The Schmidt-Hunter's procedure sensitivity to variations in the correlations as compared to other tests permits the increased probability of detecting moderator variables.

RESULTS

Overall Analysis

The initial results indicated that the two-sided message is slightly more persuasive than the one-sided message ($r = .041$, $k = 26$, $N = 7547$). However, only 47% of the observed variance could be attributed to sampling error, implying the presence of moderator variables. While the

average effect indicated a very slight advantage for the two-sided message, this estimate should not be considered representative of the entire sample of studies or messages. This conclusion, however, is controversial because some writings have suggested that moderators are theoretically uninteresting and only the main effect is important across multiple message replications or presentations (Jackson, O'Keefe, Jacobs, & Brashers, 1989). However, the contrary position argues that if the main effect actually represents the influence of some identifiable factor or interaction, the correct representation of the results should include the interaction or moderator term to interpret the nature of the main effect (Hunter, Hamilton, & Allen, 1989). This essay recognizes the controversy but operates based on the logic that main effects, in the presence of a moderator or interaction, should incorporate the moderator or interaction to interpret the effect. The justification for this decision can be found elsewhere (Keppel, 1982; Rosenthal, 1987; Winer, 1971).

Type of Two-sided Message

The moderating effect of the type of two-sided message (refutational or non-refutational) generated homogeneous results. Two-sided messages with no refutation of counterarguments resulted in the superior persuasiveness of the one-sided message ($r = -.060$, $k = 6$, $N = 1819$) with 100% of the observed variance attributable to sampling error. However, the two-sided message with refutation was more persuasive than the one-sided message ($r = .076$, $k = 19$, $N = 5624$). A total of 77% of the observed variance could be attributed to sampling error. These results indicate that the originally heterogeneous overall result can be explained by the differing operationalizations of what constituted a two-sided message. The results of these findings support Hypothesis 2 and serve to disconfirm Hypothesis 1 (both A and B) since additional moderators are unnecessary. *The one-sided message is more persuasive than a two-sided message with no refutation. However, a two-sided message with refutation is more persuasive than a one-sided message.* It should be noted that in no experiment did all three messages occur, therefore, a direct test within one experiment was not possible. Empirically, the order of most effective messages should be two-sided with refutation, one-sided, and two-sided with no refutation.

Audience Favorability Toward the Topic

The consideration of this moderator tested Hypothesis One. Only those studies in which an audience could be coded as initially favorable or unfavorable were included in this analysis. The studies coded as "unknown" did not permit any determination about how to evaluate the favorableness of the audience and therefore cannot be included. The eight studies that employed favorable audiences showed an overall correlation that is near zero ($r = .002$, $k = 8$, $N = 2952$). The average

correlation was heterogeneous (33% of the variance was attributable to sampling error). This indicates that the moderating feature for audience favorableness did not produce homogeneous results. According to Hypothesis 1 A, this finding should be homogeneous and the effect size negative. The effect size was neither negative nor homogeneous.

Unfavorable audiences were slightly more persuaded by the two-sided message ($r = .082$, $k = 9$, $N = 1195$) but the average was heterogeneous (49% due to sampling error). This analysis indicated that the introduction of audience favorability failed as a potential moderator in this analysis. While the effect size was positive for this analysis of Hypothesis 1 B, the introduction of audience favorability should produce homogeneous results. Therefore, the first hypothesis, both A and B, were unsupported in this analysis. For a complete listing of the studies and effect sizes associated with this analysis, see Table 2.

TABLE 2
Overall Effect Sizes and Type of Two-sided Message

Study ^a	Correlation ^b	Sample Size	Type of Two-sided Message
Belch	-.085	100	Nonrefutational
Bettinghaus	.052	120	Refutational
Chu	.004	273	Refutational
Dipboye	.008	84	Refutational
Dycus	.293	26	Refutational
Etgar	.118	120	Refutational
Ford	.117	220	Refutational
Hass	.306	40	Refutational
Hilyard	-.175	240	Nonrefutational
Hovland	.000	428	Refutational
Jaksa	.012	1028	Refutational
Jones	-.203	84	Nonrefutational
Kanungo	.058	96	Refutational
Kaplowitz	.059	1600	Refutational
Koballa	.264	58	Refutational
Koehler	.062	360	Refutational
Koyana	.225	66	Refutational
Ley	.184	188	Refutational
Lumsdaine	.055	88	Refutational
McCroskey	.229	96	Refutational
McGinnies	.037	104	Unknown
Paulson	-.050	978	Nonrefutational
Rosnow	-.017	197	Nonrefutational
Sinha	-.002	100	Nonrefutational
Weston	.122	240	Refutational
Winkel	.125	189	Refutational

^aFirst author listed only, see references for complete citation.

^bA positive correlation indicates the two-sided message is more persuasive while a negative correlation favors the one-sided message.

CONCLUSIONS

The results supported the general conclusion that the apparent inconsistency of earlier literature reviews on message sidedness stems from divergent operationalizations of what constitutes a two-sided message. When the difference between a two-sided message with and without refutation was incorporated into the analysis the heterogeneous results became homogeneous. The reclassification of messages did not require any moderator variables relating to audience favorability and sufficiently explains the subsequent effects.² The results confirmed Hypothesis 2, supporting the Discounting Hypothesis predictions.

Theoretical Implications

Hypothesis 1 predicted that only after consideration of audience favorableness will consistent findings be generated. The results indicated that such motivational factors are not necessary for generating a consistent and simple conclusion. These findings are inconsistent with the statements by Petty and Cacioppo (1986) about the ELM. However, the findings are *not* inconsistent with the underlying theory. It is possible to reinterpret the findings as consistent with the ELM by hypothesizing some process of cognitive processing that would account for the findings. For example, hypothesizing that the type of two-sided message causes a change in the motivational level of individuals to process message content would account for the findings. This explanation of the findings would be consistent with the ELM. Evaluation of the ELM has been hampered by a lack of commitment to a priori expected findings (Allen & Reynolds, 1989; Allen & Stiff, 1989; Burgoon, 1989). The result is an inability to test the theory in any critical sense because the theory can be renovated to explain existing data.

The Discounting Hypothesis, operationalized in Hypothesis 2, received support. The superiority of the one-sided message to the two-sided message with no refutation indicates the superiority of the consideration of counterarguments on message receivers. Unfortunately, the Discounting Hypothesis is really more an explanation for a particular effect rather than a general theory of attitude change. While the theory is supported by the available data, it is unclear what additional situations are supported by these findings. The conclusion for the Discounting Hypothesis should be contrasted with the ELM, where the findings do not support the particular application but leave the larger theoretical issues regarding message processing unchanged.

The results of this experiment may fit into a larger perspective offered by Innoculation Theory (McGuire, 1961a, 1961b). Innoculation theory uses the metaphor of a disease to represent opinion and attitude change. Innoculation occurs when a speaker includes and then refutes counterarguments to the position advocated. This "innoculates" the message receivers from subsequent counterpersuasion. This theory

would argue that a two-sided message would be more effective because it inhibits counterarguments. However, Inoculation Theory deals with attitude change over time (particularly after subsequent counter-attitudinal communication), while the Discounting Hypothesis only considers immediate attitude change. It may be that the two theories are explaining the same process but from either a static (discounting) or a dynamic (inoculation) view.

The results have implications for future empirical research and theory. The results point to areas that lack sufficient information about the cognitive processes of individuals to make clear and encompassing theoretical statements that permit a "final" conclusion. One immediate implication is the need for an experiment to incorporate all three types of messages in one single experiment to test the theoretically derived propositions included in this investigation. An experiment using all three messages should find that a one-sided message is more effective than a two-sided message with no refutation, and that a two-sided message with refutation is more effective than a one-sided message. The results of the meta-analysis indicate this particular possibility, and one recent experiment does confirm these findings (Allen, et al., 1990).

A limitation exists within the data that is not readily apparent from inspection of the messages or studies. The conclusions of any meta-analysis, no matter how consistent, depend on the variability and sufficiency of the original data to make conclusions. If the experiments do not contain sufficient variability of conditions or messages, the conclusions of the analysis are limited. However, the existence of such limitations is an empirical issue based on theoretical presuppositions. What is presented in this analysis is a conclusion based on the *available* evidence; any limitation of the available data pool limits this summary. However, until such time as alternative theoretical positions, inconsistent data, or replication of this analysis become available, the conclusion about the effectiveness of a two-sided refutational message appears warranted.

Practical Implications

The implications of the results for application to practical situations should be obvious. The results indicate that a communicator generally should use a two-sided message with a recognition and refutation of the available counterarguments. This produces the most favorable attitude response from the message receivers. At the current time it is unknown how the choice of message sidedness type effects the reaction of the receivers toward the message sender. Future research should consider and explore the effect that such message design has on communicator credibility. While a followup experiment indicated a two-sided message with refutation resulted in audience ratings of the source as *more credible* (Allen, et al., 1990), the specific processual reasons are not available in that data set.

TABLE 3
Effect Sizes for Audience Favorability

Study	Initial Position of the Audience			
	Unfavorable		Favorable	
	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>
Bettinghaus	.052	120		
Chu	.008	107	.010	166
Hass	.306	40		
Hilyard	-.441	48	-.170	48
Hovland	.160	302	-.230	126
Jaksa	.045	208	.009	524
Kaplowitz			.059	1600
McGinnies	.116	42	-.043	62
Paulson	.131	215	-.132	342
Rosnow	.080	113	-.113	84

A real concern is about the small size of the effect ($r = -.060$ or $r = .076$). Rosenthal (Rosenthal, 1983, 1984, 1987; Rosenthal & Rubin, 1979, 1982, 1985) developed a technique called the Binomial Effect Size Display (BESD). For this system, using a binary variable (one-sided or two-sided message), a correlation of the size observed here ($-.060$ or $.076$), improved the effectiveness of the message by about 20%. Considering the low cost in terms of the effort in implementing the recommendations, the 20% improvement in effectiveness is important.

Compared to other potential message features, message sidedness is less important. Various message strategies have been examined using meta-analysis and the findings indicate a pattern of effects that vary in importance. Various message design strategies like Door-in-the-face (Dillard, Hunter, & Burgoon, 1984, $r = .08$), Foot-in-the-door (Dillard, Hunter, & Burgoon, 1984, $r = .11$), evidence (Reinhard, in press, $r = .17$), fear appeals (Mongeau, in press, $r = .21$), and powerful/powerless language (Burrell & Koper, in press, $r = .25$) demonstrate that message sidedness should be considered a small message effect. However, the effects of message sidedness should not be dismissed as unimportant.

Abelson (1985) argued a lot of misconception exists about the importance of small effect sizes. He pointed out that for one at bat in a baseball game the difference between using a .200 hitter and a .300 hitter amounts to an effect size of .00317 (using omega squared). That is about the same as the effect size observed in this meta-analysis (.0036 and .0055, using r squared). What Abelson concluded is that these small effect sizes are of importance in settings where there is the assumption of cumulative processes, including "the persuasive effects of advertising." It would appear warranted to consider Abelson's remarks that "the baseball paradox is thus a model for similar paradoxes that may arise in psychological contexts" (p. 133). Abelson pointed out that what

on the surface may appear as small effect sizes can in fact be quite important at both a theoretical and practical level. While the effect is not as large as others, it still should be considered important.

The observed difference in operationalizing what is meant by a two-sided message points to the need for a theory of messages and message effects. Without such theories, past and future experiments may contain problems that may not be as easily or readily identifiable as in the message sidedness literature. The real test of the value of these results will be whether they contribute to an overall theory of messages. The previous ideas about messages tended to indicate an indeterminacy about the effect of messages creating a web of contextual features that prevented generalizations. The evidence accumulated and analyzed here indicates the possibility that simple generalizations may be possible. Without a clear and comprehensive theory of message effects, such generalizations will be limited or impossible. The conclusions should serve to help practitioners and assist in curriculum development. However, the larger picture needs development for these results to be placed within the context of future theoretical and experimental issues.

ENDNOTES

1. Persuasiveness in these studies was operationalized by the use of self-report measures. While the use of self-report techniques has been criticized, particularly for measuring attitudes (Benoit & Benoit, 1986; Hample, 1984; LaPiere, 1934), a recent meta-analysis (Kim & Hunter, 1991) of over 100 studies and 90,000 subjects demonstrates a high attitude/behavior correlation ($r = .79$).

2. The results of analyses considering publication bias, education level of the audience, or audience familiarity with the topic is available from the author. None of these analyses affect the findings of this report.

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