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FACTORS AFFECTING THE SUASORY FORCE OF IMPLICIT AND EXPLICIT CONCLUSIONS IN PERSUASIVE MESSAGES

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Michael Gerard Cruz

has been accepted towards fulfillment
of the requirements for

Master of Arts degree in Communication

Franklin J. Boster
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FACTORS AFFECTING THE SUASORY FORCE OF IMPLICIT AND EXPLICIT CONCLUSIONS IN PERSUASIVE MESSAGES

By

Michael Gerard Cruz

A THESIS

Submitted to
Michigan State University
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ABSTRACT

FACTORS AFFECTING THE SUASORY FORCE OF IMPLICIT AND EXPLICIT CONCLUSIONS IN PERSUASIVE MESSAGES

By

Michael Gerard Cruz

Body of Abstract

A meta-analysis found that persuasive messages with explicit conclusions produced slightly more attitude change than persuasive messages with implicit conclusions. A study then investigated the existence of two possible mediating variables, conclusion comprehension, and perceived position of the source. Data were obtained from 176 participants on two persuasive messages. Analyses indicated that the data were consistent with a causal chain in which conclusion drawing affected conclusion comprehension which affected the perceived position of the source, which in turn affected attitude change. Moreover, the data were consistent with a similar causal model in which attitude change was replaced with post-test attitude, and pre-test attitude was included as a predictor of post-test attitude. Implications of these findings for the construction of persuasive messages are discussed.

ACKNOWLEDGEMENTS

Thanks to Linda Marshall for being very supportive and for leading the way, and to Drs. Frank Boster, Steve Wilson, and Jack Hunter for making this thesis much better than it otherwise would have been.

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INTRODUCTION

Constructing and presenting a persuasive message is presently an inexact undertaking. Although a number of alternatives are available when organizing a persuasive message, which alternatives produce the greatest attitude change are not always known. One such alternative is whether to state explicitly the conclusion of an argument or leave the conclusion implicit. Few studies have examined whether a message is more persuasive when audience members are left to draw their own conclusions, or when the message includes a specific statement of the conclusion. Furthermore, past research stalled when conflicting and inconclusive results were obtained, and no theoretical framework was available to reconcile the findings.

Previous researchers defined explicit persuasive messages as including a specific statement of the final conclusion at the end of the message. Implicit persuasive messages were then defined as explicit messages with the statement of the final conclusion removed. Extant arguments predict that both implicit and explicit messages will produce greater attitude change. Favoring implicit conclusions is the nondirective school of psychotherapy. Rogers (1947) states:

> ... we have frequently observed that when the individual has been authoritatively told that he is governed by certain factors or conditions beyond his

> control, it makes therapy more difficult, and it is only when the individual discovers for himself that he can organize his perceptions that change is possible. (p. 361)

In the present context Rogers' argument suggests that the targets of a persuasive message will be influenced more if they arrive at their own conclusions than if a conclusion is provided.

Alternatively, Brehm (1966) theorized that restriction or elimination of a person's perceived free behaviors will arouse a state of psychological reactance. Reactance was thought to result in attempts to restore freedom, and to increased valuation of restricted behaviors. If holding an opinion is a free behavior, then a persuasive message with an explicit conclusion can be viewed as an attempt to restrict that person's freedom. A source's explicit attempt to restrict the target's range of opinions produces psychological reactance, and hence little attitude change. Conversely, an implicit message allows the audience to draw their own conclusions, producing no reactance. In the absence of psychological reactance, attitude change in the desired direction is more likely.

Linder and Worchel (1970) offered a third reason to expect that implicit messages would be more persuasive than explicit messages. They argued that stating the conclusion of one's message reduces credibility. The explicit communicator appears to have a vested interest in persuading the audience; whereas an implicit communicator appears dispassionate or nonpartisan. Contrary to Linder and

Worchel, Hovland and Mandell (1952) argued that a communicator who offers an implicit conclusion is seen as having something to conceal, and a communicator who states a conclusion explicitly is seen as frank and forthright.

Hovland and Mandell also argued that audience members may require an explicit conclusion to understand the message clearly. Through insufficient intelligence, motivation, or prior knowledge, audience members may not comprehend an implied conclusion. Were the recipients of an implicit message to reach no conclusion, a conclusion unrelated to that intended, or a conclusion in the direction opposite that intended, less attitude change would occur in the advocated direction than for a corresponding explicit message. Thus, conclusion comprehension was proposed as a mediator of the conclusion drawing-attitude change relationship. Moreover, Hovland and Mandell proposed audience intelligence as a moderating variable, presuming that less intelligent receivers need an explicit statement of the conclusion to understand the message, but more intelligent receivers do not.

Another variable proposed to affect conclusion comprehension was involvement (Kardes, 1988). The type of involvement discussed by Kardes was termed outcome-relevant involvement by Johnson and Eagly (1989). Kardes argued that persons who are highly involved in an issue would spontaneously generate the conclusion of an implicit message more frequently than would weakly involved persons. The

self-generated conclusions of more involved persons were expected to produce greater attitude change than the incomplete information available to less involved persons. Thus Kardes predicted that for highly involved persons, implicit messages would produce as much attitude change as explicit messages. For less involved persons, Kardes predicted that implicit messages would produce less attitude change than explicit messages. Interestingly, Kardes expected no main effect for outcome-relevant involvement, despite research to the contrary (for a review, see Johnson & Eagly, 1989).

Thistlethwaite, de Haan and Kamenetzky (1955) also discussed conclusion comprehension, but as a moderating variable. Specifically, they argued that implicit messages are more effective when audience members are able to comprehend the intended conclusion. When audience members are unable to comprehend the conclusion to an implicit message, e.g. when intellectual ability is low, explicit messages are more effective.

A second variable thought to interact with conclusion drawing is initial position (Fine, 1957; Linder & Worchel, 1970; Thistlethwaite, de Haan, & Kamenetzky, 1955; Weiss & Steenbock, 1965). Initial position was defined as a person's opinion on an issue prior to hearing a relevant persuasive message. Weiss and Steenbock (1965) argued that the principles of the nondirective school of psychotherapy would apply only when the intended conclusion was

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disagreeable to the audience. When audience members hold initially negative opinions, an explicit message would be resisted, but an implicit message would be accepted. Only when the conclusion being advocated is agreeable to the audience will explicit messages be more effective.

Linder and Worchel (1970) predicted a three-way interaction between initial position, conclusion drawing, and effort. Invoking Festinger's theory of cognitive dissonance (1957), they argued that exerting effort to understand a message with which one disagrees is dissonance arousing. To reduce dissonance persons would change their opinion in the direction advocated by the message. Because implicit messages are more difficult to comprehend, greater dissonance will arise. Explicit messages require less effort to comprehend, and produce less dissonance. Thus, if the explicit and implicit conclusions were comprehended equally, implicit messages would produce greater attitude change for initially unfavorable individuals. For initially favorable persons, expending effort to understand an implicit message is not dissonance arousing, and hence does not produce greater attitude change than the corresponding explicit message.

The final variable previously proposed to interact with conclusion drawing is commitment. Tubbs claimed that high levels of commitment (termed value-relevant involvement by Johnson and Eagly, 1989) "will render audiences receptive to congenial communications and resistant to uncongenial" (p.

14). Therefore, Tubbs predicted that commitment would interact with conclusion type to affect attitude change although he is unclear about the nature of the interaction.

The applicability of the above hypotheses to past research is difficult to assess because prior studies did not give exact descriptions of the persuasive messages used. Messages were described as stating the final conclusion explicitly or omitting the final conclusion, but it is unclear whether other conclusions than the final one were drawn within the message. That is, the messages may have contained any number of arguments and conclusions that all led to a final conclusion. One may wonder whether implicit messages actually did draw some explicit conclusions although omitting the final conclusion. If it is the case that conclusions were drawn within implicit messages, the arguments of reactance theory and the nondirective school of psychotherapy may not apply. Thus past research may have provided only a weak test of their applicability. In fact, doubt is cast on all prior research because of the ambiguity in the construction of the implicit messages.

This study addressed this criticism through the use of carefully crafted persuasive messages (Appendix A). Only one final conclusion was drawn in the explicit messages, and no conclusions were drawn in the implicit messages. Also different from previous studies, two types of implicit message were used--a moderately implicit message and a strongly implicit message. Moderately implicit messages

were constructed by removing the conclusion from the corresponding explicit messages. Strongly implicit messages were constructed by removing all explicit statements of the topic from the corresponding moderately implicit messages.

REVIEW

To assess the viability of the preceding explanations, a meta-analysis was conducted on six studies (listed in Table 1). These are the only studies found that had examined the impact of conclusion type on attitude change. Although a seventh study (Linder & Worchel, 1970) discussed the impact of conclusion drawing, an implicit message condition was not included in the design. The six studies included a total sample of 1423 subjects. Thistlethwaite et al. (1955) used Air Force recruits; the other five studies used college undergraduates.

Table 1

Studies in the Meta-analysis

Author	r	N	95% Confidence Interval
1. Fine	.092	375	-.01 < r < .19
2. Hovland & Mandell	.236	235	.12 < r < .36
3. Kardes	.038	192	-.03 < r < .11
4. Thistlethwaite et al.	.011	428	-.08 < r < .10
5. Tubbs	.376	52	.14 < r < .61
6. Weiss & Steenbock	.000	141	-.17 < r < .17

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Pearson's *r* was chosen as the measure of effect size. The sign of *r* was chosen to be positive when explicit messages produced greater attitude change than implicit messages. In each case, the effect size was calculated by taking the square root of eta^2 with one degree of freedom. Effect sizes were weighted by sample size and cumulated.

For Tubbs (1968), Fine (1957), and Kardes (1988) this calculation was not straightforward. Tubbs reported an incorrect analysis of variance, but also included his data in their entirety so the reader could redo the analysis (Table 2). Fine reported cell means and *p* values, but not within-cell standard deviations or *F* values. Fortunately, he reported *p* values precisely. From *p*, *F* could be determined, and the analysis of variance table reproduced.[1] Finally, Kardes did not report a test of the main effect for conclusion drawing, only the results of an a priori contrast analysis. Because a table of means was also included, the analysis of variance table could be reconstructed, and the effect size calculated.

Overall, messages with explicit conclusions were superior to messages with implicit conclusions (r = .082, s_r^2 = .0064). However, the observed variance in correlations was greater than expected due to sampling error (expected sampling error s^2 = .0042, or 66 percent of the observed variance), indicating the presence of additional artifacts or moderators.

Table 2

Cell Means and ANOVA (Tubbs, 1968)

(Higher scores indicate a more attitude change in the direction advocated by the message.)

	Explicit Conclusion	Implicit Conclusion
High Commitment	7.50 N=6	-4.17 N=6
Medium Commitment	5.58 N=12	1.50 N=12
Low Commitment	5.13 N=8	0.25 N=8

Source of Variance	Sums of Squares	df	Mean Squares	F	p	eta
Conclusion Type	480.08	1	480.08	9.79	.007	.376
Commitment Level	28.71	2	14.35	.29	.789	.092
Interaction	123.36	2	61.68	1.03	.366	.191
Within	2764.63	46	60.10	-	-	-
Total	3396.78	51	-	-	-	-

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Statistical Artifacts

Sampling error produces an observed variance effect sizes, but other statistical artifacts can also increase the observed variance in effect sizes. One such artifact is unequal reliability of measurement in the dependent variable. None of the six studies presented measurement reliability data, but all indicated the number of items used to measure the dependent variable. Because the number of items in a measure associates positively with measurement reliability, correlating effect size with number of items provides an indirect assessment of the impact of unreliability. Curiously, number of items correlates negatively with effect size (r = -.64, p = .09). That is, the more items used to measure the dependent variable, the smaller the effect size. Not statistically significant with only six data points, the correlation is probably due to sampling error.

Another artifact that may increase the variance in effect sizes is restriction in range for the independent variable. At first glance, range variation should not be a problem because each study included an explicit conclusion condition and an implicit conclusion condition. Nevertheless, one can speculate about the degree to which the conclusion is implicit or explicit.

Implicit and explicit may be considered end points of a continuum along which messages vary. For example, a particular message may only weakly imply a conclusion,

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necessitating an explicit statement of the conclusion for comprehensibility. On the other hand, a message may very strongly imply a conclusion, making an explicit statement of the conclusion virtually redundant. If the implicit messages in these studies imply differing conclusions relative to the explicit messages, range variation may be producing variation in effect sizes. Because only Thistlethwaite et al. (1955) reported data on the ability of subjects to state the conclusion of the message, the impact of range variation cannot be assessed.

In sum, the variance in effect sizes obtained in past research cannot be attributed to the statistical artifacts discussed previously. Hence moderating variables must be investigated as potential sources of the variance in effect sizes.

Moderators

Hunter and Schmidt (1990) argued that the effects of moderators can be assessed in two ways. The first method entails coding study features and correlating those features with effect sizes. The second method is to create subsets of subjects based on study features and calculate effect sizes for each subset. Hunter and Schmidt argued that the first method is more desirable, but the second method was chosen because only six studies were available. The following moderators were included from past research: source credibility, conclusion comprehension, intelligence, involvement, initial position, and commitment. Another

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moderating variable, message sidedness, was also analyzed. Message sidedness, whether a message includes only arguments in support of a position (one-sided), or includes both pro and con arguments (two-sided), was not discussed by past researchers, but was included in this analysis because prior studies included both one- and two-sided messages. Jackson and Allen (1987) and Allen et al. (1991) have argued that message sidedness affects attitude change.

Source Credibility

Hovland and Mandell (1952) and Fine (1957) controlled the credibility of the source in their studies. Hovland and Mandell attributed their messages to either an economist from a leading university (high credibility) or the head of a large importing firm (low credibility). Fine attributed his messages to the New York Times (high credibility), or the Daily Worker, official newspaper of the Communist Party in the United States (low credibility). Neither study assessed the effectiveness of their controls. The other four studies neither controlled nor measured source credibility. Moreover, the credibility of the source used in the other four studies could not be assessed. Thus, data on source credibility were available from just two studies.

Hovland and Mandell presented sufficient data for separate effect sizes to be calculated for each level of source credibility, but Fine did not report within-cell variances. Because the mean within-cell variance could be calculated from the analysis of variance table, calculations

were based on the assumption that within-cell variances were equal.

These two studies produced a combined $\underline{r}$ = .156, $\underline{s}_r^2$ = .0054, $\underline{N}$ = 574. For these studies, the variance expected from sampling error is $\underline{s}^2$ = .0033 or 61 percent of the observed variance. With a more credible source, $\underline{r}$ = .170, $\underline{s}_r^2$ = .0076, $\underline{N}$ = 282, and with a less credible source, $\underline{r}$ = .116, $\underline{s}_r^2$ = .0050, $\underline{N}$ = 292. The difference between the two correlations is not statistically significant, although the effect size for credible sources is 1.5 times the effect size for less credible sources. To three decimal places the variance expected from sampling error was $\underline{s}^2$ = .067 for both more credible and less credible sources. Thus, partitioning the sample by levels of source credibility did not reduce the variance in effect sizes.

These results suggest that source credibility does not moderate the relationship between conclusion type and attitude change, although this hypothesis cannot be eliminated given the very low power of this analysis. In addition, these data do not address the hypothesis that source credibility acts as a mediator as postulated by Linder and Worchel (1970) and Hovland and Mandell (1952). As yet, researchers have not measured the impact of conclusion drawing on credibility. Hence, the argument stated previously, that conclusion type affects credibility which in turn affects attitude change, remains to be tested.

Conclusion Comprehension

Thistlethwaite et al. (1955) argued that implicit messages are more effective only when audience members are able to comprehend the intended conclusion. When audience members are unable to comprehend the conclusion to an implicit message, explicit messages would be more effective.

Strangely, they do not test their hypothesis. They find a main effect for conclusion type on comprehension such that explicit conclusions were better comprehended than implicit conclusions, and they report that conclusion comprehension did not affect attitude change. They never test the interaction between conclusion type and comprehension on attitude change, however. Rather, they merely report that comprehension did not have an effect on attitude change. Furthermore, they do not report cell means, preventing the reader from testing the hypothesis. Thus the hypothesized impact of conclusion comprehension remains to be tested.

Intelligence

Thistlethwaite et al. (1955) and Hovland and Mandell (1952) assessed intelligence using the Technician Specialty Aptitude Indices and the ACE intelligence test respectively. Neither report an interaction between intelligence and conclusion type. Thistlethwaite et al. found a main effect for intelligence on attitude change; Hovland and Mandell observed no effect for intelligence. Hovland and Mandell argued that their subjects, all college students, showed

little variance in intellectual ability, precluding an observable impact. Unfortunately, the data for low and high intelligence subjects could not be cumulated because cell means were not reported in either study.

Involvement

Kardes (1988) used an advertisement for a compact disc player to study conclusion drawing. High outcome-relevant involvement was induced by heading one advertisement with two statements, "You Will Probably Own a Compact Disc Player Sooner Than You Think," and "Some CD Players are Very Bad and Some are Very Good," (p. 228) in bold-faced type. The low outcome-relevant involvement advertisement was headed, "Compact Disc Players."

The cell means and analysis of variance table from Kardes (1988) are shown in Table 3. Kardes reported a significant F-value ($F = 5.87$, $p = .05$) for his own a priori contrasts. Based on the results of the contrast analysis, Kardes argued that the least attitude change occurred for less involved subjects who received an implicit message, and that subjects in the other three cells did not differ significantly; however, the residual explained variance approached significance ($F = 1.28$, $p = .07$). Moreover, the complete analysis of variance table shows that involvement has a main effect that is stronger than the interaction proposed by Kardes ($F = 7.02$, $p < .01$). Finally, a post hoc contrast analysis (the contrasts are shown in Table 3)

Table 3

Cell Means, Contrasts, and ANOVA (Kardes, 1988)

(Higher scores indicate a more positive attitude. Numbers in () are the contrasts indicated by Kardes, and numbers in [] are the post hoc contrasts.)

	Explicit Conclusion	Implicit Conclusion
High Involvement	5.54 (1) N=48 [1]	5.65 (1) N=48 [1]
Low Involvement	5.21 (1) N=48 [0]	4.88 (-3) N=48 [-2]

Source of Variance	Sums of Squares	df	Mean Squares	F	p	eta
Conclusion Drawing	0.59	1	0.59	0.22	>.05	.038
Involvement	14.82	1	14.82	7.02	.01	.189
Interaction	2.37	1	2.37	1.12	>.05	.076
Contrasts (Kardes)	12.39	1	12.39	5.87	.05	.173
Contrasts (post hoc)	16.36	1	16.36	7.75	.01	.199
Within	396.83	188	2.11	-	-	-
Total	414.62	191	-	-	-	-

produced a significant interaction ($F = 7.75$, $p < .01$) slightly different from the interaction proposed by Kardes.

Specifically, the data are consistent with an interaction in which the high involvement cells produce the greatest attitude change, the low involvement/explicit conclusion cell produces intermediate levels of attitude change, and the low involvement/implicit conclusion cell produces the least attitude change. Given the present findings, Kardes' proposed interaction may not be the best explanation for the data. Without additional data, however, no strong conclusions can be drawn.

Initial Position

Three studies (Fine, 1957; Thistlethwaite et al., 1955; Weiss & Steenbock, 1965) have examined the interaction between conclusion type and initial position. Fine (1957) found that for persons initially favorable to the message, explicit conclusions are more persuasive than implicit conclusions, but for those initially unfavorable no differences between explicit and implicit conclusions were observed. Weiss and Steenbock (1965) reported the opposite. For persons initially favorable no differences were found; for persons initially unfavorable explicit conclusions were superior to implicit conclusions. Interestingly, a post hoc contrast analysis of the Weiss and Steenbock data indicates otherwise (see Table 4 for the contrasts used in this analysis). For persons initially favorable implicit

conclusions produced more attitude change than explicit conclusions. Finally, Thistlethwaite et al. (1965) report no interaction between initial position and conclusion type (Table 4).

Table 4

Effect of Conclusion Type and Initial Position

Thistlethwaite et al., 1955 (higher scores indicate a more positive attitude).

	Explicit Conclusion	Implicit Conclusion
Favorable	4.30 N=44	4.48 N=44
Unfavorable	2.91 N=170	2.82 N=170

Weiss and Steenbock, 1965 (Higher scores indicate a more negative attitude).

	Explicit Conclusion	Implicit Conclusion
Favorable	10.50 N=16	8.77 N=36
Unfavorable	12.39 N=22	14.12 N=25

As with intelligence, the results for initial position could not be cumulated. Because neither Fine nor Thistlethwaite et al. reported cell means, effect sizes could not be calculated. Furthermore, data were not available on the initial attitudes of subjects in Hovland

and Mandell (1952), Kardes (1988), and Tubbs (1968). The topics used were such that no determination could be made of subjects' initial attitudes. Results conflict, but these may or may not be within sampling error of each other. Again, further study is necessary.

Commitment

Tubbs (1968) reported an interaction between commitment and conclusion type on attitudes, but his analysis of variance is incorrect. A re-analysis of his data indicates that commitment did not have a main effect ($F = .29$), nor did it interact with conclusion type ($F = 1.03$, df = 2, 46, $p = .366$). No other authors investigated commitment.

Message Sidedness

Although not considered by previous authors, the type of argument used appears to have varied across studies. From the descriptions provided, it is clear that three of the studies (Hovland and Mandell, 1952; Thistlethwaite et al, 1955; Tubbs, 1968) used two-sided persuasive messages. The other studies did not explicitly describe the messages used. If one assumes that one-sided messages were used, one can speculate about a possible interaction between conclusion drawing and message sidedness.

When two-sided messages were used, the mean effect for conclusion type was $r = .111$, $s_r^2 = .0162$, $N = 715$. For the studies not specifying message sidedness, $r = .058$, $s_r^2 = .00136$, $N = 708$. The variance in effect sizes for unspecified messages is well within the expected variance

due to sampling error ($\underline{s}^2$ = .00423), but for two-sided messages, the expected variance due to sampling error ($\underline{s}^2$ = .00413) is only 25 percent of the observed variance.

Clearly, any conclusions about an interaction between message sidedness and conclusion drawing must rest on an unsubstantiated assumption--that one-sided messages were used in the studies that did not specify two-sided messages. Therefore, any conclusions drawn from the analysis remain tentative and speculative. If the assumption is valid, an interaction between message sidedness and conclusion drawing is suggested (the observed correlations do not differ significantly from each other, but statistical power is low with data from only six studies). For both unspecified and two-sided messages explicit messages were more persuasive than implicit messages, but the difference was more pronounced when two-sided messages were used. The difference in effect sizes is small, but not necessarily unimportant (Abelson, 1985; Rosenthal & Rubin, 1979). Specifically, the observed difference may be an indication that conclusion comprehension mediates the relationship between conclusion drawing and attitude change. Because two-sided messages present conflicting viewpoints, explicit conclusions may be necessary for the audience to interpret the message.

HYPOTHESES

As is apparent from the meta-analysis few conclusions can be drawn from previous research. No prior study has tested a model that links conclusion drawing to attitude change through specific mediating variables. Although conclusion comprehension has been studied as one such mediating variable, results are inconclusive. For example, Thistlethwaite et al. (1955) found an effect of conclusion drawing on conclusion comprehension such that explicit conclusions were better comprehended, but report an insignificant effect of conclusion comprehension on attitude change. The apparent absence of a relationship between conclusion comprehension and attitude change may be due to the presence of additional mediators or moderators.

In particular, conclusion comprehension is predicted to have a causal impact on the perceived position advocated. Typically, a persuasive message takes a stand on an issue rather than arguing a neutral position. When message recipients understand the conclusions to such messages, they naturally perceive that the source of the message holds a non-neutral opinion. In contrast, when message recipients do not understand the conclusions, they have no reason for attributing a non-neutral opinion to the source. Hence, lack of conclusion comprehension would produce an overall more moderate perception of the source's position.

Next, perceived position of the source is predicted to impact attitude change as specified in the linear discrepancy model (see Hunter, Danes & Cohen, 1984). Linear discrepancy states that attitude change can be predicted from attitude and messages values by the equation

$$\blacktriangle a = \alpha(m - a).$$

That is, attitude change is proportional to the discrepancy between the position advocated in the message and the message recipient's attitude. This equation can also be written as

$$a_{t+1} = (1-\alpha)a_t + \alpha m.$$

That is, one's subsequent attitude is a positively-sloped linear function of one's prior attitude and the position advocated in a persuasive message weighted by the values α and $1 - \alpha$.

In summary, I hypothesize that more explicit messages will produce greater conclusion comprehension (Thistlethwaite et al., 1955), greater conclusion comprehension will produce more extreme perceptions of the source's position (as argued above), and more extreme perceptions of the source's position will produce greater attitude change (Hunter, Danes & Cohen, 1984).

The impact of involvement on conclusion comprehension also requires further examination. Kardes (1988) reported an interaction between outcome-relevant involvement and conclusion drawing in which conclusion comprehension was said to be a mediating variable. Unfortunately, Kardes did

not provide pertinent data. Although subjects answered questions about the conclusion of the message, Kardes did not report the accuracy of those responses, only the latencies exhibited by subjects while answering. Subjects in the low outcome-relevant involvement, implicit message condition did exhibit greater response latencies compared to subjects in the high outcome-relevant involvement or explicit message conditions, but whether or not Kardes' results generalize to conclusion comprehension will be investigated in this study.

If the effects on response latencies generalize to conclusion comprehension, then outcome-relevant involvement should interact with conclusion drawing such that the regression of conclusion comprehension onto outcome-relevant involvement has: (a) a steep positive slope for the strongly implicit message, (b) a moderately positive slope for the moderately implicit message, and (c) a zero slope for the explicit message.

Outcome-relevant involvement is also expected to influence attitude change. Johnson and Eagly (1989) reported that persons higher in outcome-relevant involvement exhibit less attitude change than persons lower in outcome-relevant involvement.

The last issue to be considered in this study is the role of source credibility. Source credibility was previously proposed as a mediating variable (Hovland & Mandell, 1955; Linder & Worchel, 1978), but the impact of

conclusion drawing on credibility has not been measured. Different authors predicted that compared to explicit messages, implicit messages will either reduce and increase source credibility. Because conflicting proposals were advanced concerning this relationship, this study will investigate whether either of competing explanations is consistent with data.

METHOD

Subjects

Subjects were 176 undergraduates drawn from communication classes at a midwestern university. Subjects received course extra credit for participating.

Design

A 3 X 2 X 2 mixed design with random assignment to treatments was used. The independent variables were conclusion type, involvement and topic, and the dependent variables were pre-test and post-test attitude. Each subject responded to two topics, and within topics, subjects were randomly assigned to one of three conclusion-drawing conditions and one of two involvement conditions.

Instrumentation

Attitude change was calculated as the difference between pre-test and post-test measures of attitude. The same 6-item, Likert-type scale was used on both the pre- and post-test. Four other variables were assessed: (a) perceived position advocated by the source, (b) pre-test and post-test source credibility, (c) outcome-relevant involvement with the topic, and (d) conclusion comprehension. Subjects' perceptions of the position advocated by the source were measured using the same scale that was used to measure their own attitudes (thus higher scores indicated perceptions of a more positive position

advocated by the source). Their perceptions of the credibility of the source, and their involvement with the topic were assessed using 8- and 9-item semantic differential scales respectively. Comprehension of the conclusion was assessed by eight true/false items testing their comprehension of the conclusion of the message (see Appendix B for the items in each scale).

Messages

Desired were topics on which initial attitudes varied widely and represented the entire range of opinions from extremely positive to extremely negative. Based on pre-test data, the topics chosen were the legalization of marijuana, and the change from a quarter system to a semester system at Michigan State University. For each topic 31 pre-test subjects responded on 5-items (Appendix C); the possible scores ranged from 5 to 25. Responses to the legalization of marijuana issue ranged from 5 to 25, with a variance of 33.8. For the semester issue responses ranged from to 5 to 24, with a variance of 32.4.

For each topic an explicit message was constructed that contained three different arguments leading to the same explicitly-stated conclusion, and a final restatement of the conclusion. Moderately implicit messages were produced by removing each statement of the conclusion from the explicit message. Strongly implicit messages were constructed by removing each explicit statement of the topic from the moderately implicit messages (Appendix A).

The three messages about legalizing marijuana were described as editorials in the newspaper USA Today. In the low involvement condition the editorials were said to concern a political debate in California in 1986. In the high involvement condition, the editorials were said to concern a political debate in Michigan in 1990. The three messages about the semester change were described as editorials in the Journal of Education. In the low involvement condition the editorials were said to concern policies at the University of Southern California in 1986. In the high involvement condition the editorials were said to concern policies at Michigan State University in 1990.

Procedures

At the start of each experimental session, the researcher read the following:

> We are interested whether college students are well informed about some current issues. We will assess how well informed you are by first asking you some questions about an issue. Next, you will read some background information related to the issue. Finally, you will again answer some questions about the issue. Please read all the materials carefully, and answer the questions truthfully.

The researcher then distributed a packet containing a warm-up task (an authoritarianism scale (Altemeyer, 1988) and a self esteem scale (Rosenberg, 1965)) and the following which were included once for each topic: (a) a pre-test measure of attitude embedded in items unrelated to the study, (b) a pre-test measure of source credibility, (c) a message, (d) a post-test measure of attitude, (e) a measure

of involvement, (f) a measure of conclusion comprehension, and (g) a post-test measure of source credibility. Topic order was reversed across the questionnaires so that some subjects read the legalization of marijuana message first, and other subjects read the semester change message first. In addition, involvement was crossed with topic order, so that the high and low involvement conditions were divided between each topic and each order of presentation.

Subjects were allowed as much time as necessary to complete the materials. When all the questionnaires were completed, subjects were debriefed and dismissed.

RESULTS

Preliminary Analyses

Prior to testing the hypotheses, three analyses were conducted. First, a confirmatory factor analysis was employed to assess the content validity of all the scales used in the study. The analysis included the deletion of items for three reasons: (a) failing the criterion of internal consistency, (b) failing the criterion of parallelism, and (c) reducing the reliability of the scale (see Appendix B for deleted items). For scales that occurred more than once in the questionnaire, data from the first responses to the items were factor analyzed, and subsequent responses to the items were examined to assess if the same factor structure fit each set of responses.

With one exception repeated scales produced the same factor structure for each set of responses. The exception was the source credibility measure; three of the four occurrences of the measure fit the same factor structure, but the post-test measure of source credibility for the semester change issue generated inconsistent results. Items 5, 6, and 7 were significantly negatively correlated with the other items and were removed from the measures of post-test source credibility and source credibility change. All scales produced unidimensional solutions, and means, standard deviations, and Cronbach's alpha for each are

listed in Table 5. Also listed are attitude change and source credibility change. Both were computed by subtracting pre-test scores from post-test scores.

The second analysis employed t-tests to determine if the order of topic presentation had an impact. In no case were statistically significant differences found for any of the variables associated with either topic.

Third, the effect of the involvement induction on perceived involvement was assessed. The involvement induction had no impact on perceived involvement (r = -.046, p > .05) for the legalization of marijuana issue. For the change to semesters issue, however, there was a small, but significant impact (r = .128, p < .05). Because the involvement induction was weak or unsuccessful, subsequent analyses were conducted using the measure of perceived involvement. For both topics perceived involvement was similarly distributed, with scores ranging from 6 to 42 and a small negative skew. For the legalization of marijuana topic perceived involvement had a mean of 30.9 and a standard deviation of 6.7, for the semester change topic perceived involvement had a mean of 31.2 and a standard deviation of 8.2.

Tests of Hypothesis

The impacts of conclusion drawing and involvement on conclusion comprehension were tested using analysis of variance and linear regression respectively. A significant effect was found for conclusion drawing (for the marijuana

Table 5

Mean, Standard Deviation, And Cronbach's Alpha

(#1 indicates a scale used for the legalization of marijuana issue, and a #2 indicates a scale used for the change to semesters issue.)

Scale	Items	Mean	SD	Alpha
Involvement #1	6	30.9	6.7	.85
Involvement #2	6	31.2	8.2	.89
Pre-test Attitude #1	6	22.6	10.1	.87
Pre-test Attitude #2	5	22.2	8.4	.84
Post-test Attitude #1	6	23.6	10.0	.90
Post-test Attitude #2	5	23.0	9.2	.93
Conclusion Comprehension #1	3	2.0	1.0	.51
Conclusion Comprehension #2	4	3.4	.9	.56
Perceived position of source #1	6	32.6	8.8	.86
Perceived position of source #2	5	36.3	6.7	.78
Attitude Change #1	3	.7	3.1	.32
Attitude Change #2	6	.8	4.6	.49
Pre-test Source Credibility #1	7	34.5	7.2	.89
Pre-test Source Credibility #2	7	32.5	6.1	.87
Post-test Source Credibility #1	7	34.3	6.6	.89
Post-test Source Credibility #2	4	19.4	4.3	.88
Source Credibility Change #1	7	-.3	5.6	.76
Source Credibility Change #2	4	.5	3.1	.68

topic, F = 38.75, df = 2, 170, p = .00; for the semester topic F = 5.26, df = 2, 167, p = .01), but not for perceived involvement (for the marijuana topic, r = .04, p = .31; for the semester change topic, r = -.07, p = .19). To test the interaction between perceived involvement and conclusion drawing, conclusion comprehension was regressed onto involvement at each level of conclusion drawing (Table 6). The slopes of these regression equations did not differ significantly from zero, or from each other (p > .05) indicating that the hypothesized interaction between involvement and conclusion drawing did not occur.

Table 6

Regression of Comprehension Onto Involvement

(Separate regressions were computed at each level of conclusion drawing. N = 169; bs are unstandardized regression coefficients. No bs were statistically significant at p < .05.)

Conclusion Drawing	b	Standard Error of b	Intercept
Strongly Implicit			
Marijuana Topic	.025	.018	.50
Semester Topic	.005	.017	3.03
Moderately Implicit			
Marijuana Topic	-.002	.015	2.10
Semester Topic	.006	.015	3.29
Explicit			
Marijuana Topic	.020	.014	1.93
Semester Topic	-.012	.011	4.05

To test the causal models hypothesized previously a path analysis was conducted. Two models were analyzed, one which used attitude change scores and one which used pre-test and post-test attitude scores.[2] Because involvement was found not to affect conclusion comprehension in the previous analysis, the hypothesized interaction between involvement and conclusion drawing was not included in the models. Thus, one model specified a causal chain which included, in order: conclusion drawing, conclusion comprehension, perceived position of the source and attitude change. Involvement was included in the first model also as a predictor of attitude change. The second model replaced attitude change with post-test attitude, and included pre-test attitude as a predictor of post-test attitude.

Prior to computing zero-order correlations scatterplots were examined to see if each pair of variables was linearly related for each topic. Because no nonlinearities were observed, correlations (Tables 16 and 17) and path coefficients (Figures 1) were computed. Based on goodness of fit indices (chi-square = 4.33, df = 5, $p > .10$, and chi-square = 3.67, df = 5, $p > .10$ for the legalization and semester topics respectively) the first model was consistent with the data. For the legalization of marijuana topic each of the path coefficients was significant at $p = .05$ except for the path from involvement to attitude change; for the semester change topic neither the path from perceived position of the source to attitude change nor the

Table 16

Correlation Matrix: Legalization Of Marijuana Issue

(An asterisk (*) indicates a correlation significant at $p < .05$, $N = 165$, one-tailed test.)

	1	2	3	4	5	6	7	8	9
(1) PERCEIVED INVOLVEMENT	1.00								
(2) PRE-TEST ATTITUDE	.26*	1.00							
(3) PRE-TEST SOURCE CREDIBILITY	.13*	.02	1.00						
(4) CONCLUSION DRAWING	-.05	.08	-.13*	1.00					
(5) CONCLUSION COMPREHENSION	.04	.10	-.06	.55*	1.00				
(6) PERCEIVED POSITION OF THE SOURCE	.17*	.23*	-.09	.46*	.66*	1.00			
(7) POST-TEST ATTITUDE	.22*	.94*	-.01	.10	.13*	.27*	1.00		
(8) POST-TEST SOURCE CREDIBILITY	.27*	-.02	.67*	-.14*	-.04	-.05	-.03	1.00	
(9) ATTITUDE CHANGE	-.09	-.11	.01	.08	.13*	.12	.18*	.02	1.00

Table 17

Correlation Matrix: Change To Semesters Issue

(An asterisk (*) indicates a correlation significant at $p < .05$, $N = 165$, one-tailed test.)

	1	2	3	4	5	6	7	8	9
(1) PERCEIVED INVOLVEMENT	1.00								
(2) PRE-TEST ATTITUDE	-.11	1.00							
(3) PRE-TEST SOURCE CREDIBILITY	.15*	.12	1.00						
(4) CONCLUSION DRAWING	-.03	.12	.11	1.00					
(5) CONCLUSION COMPREHENSION	-.07	-.05	.07	.55*	1.00				
(6) PERCEIVED POSITION OF THE SOURCE	.13*	-.04	.21*	.26*	.57*	1.00			
(7) POST-TEST ATTITUDE	-.06	.87*	.20*	.13*	-.01	-.02	1.00		
(8) POST-TEST SOURCE CREDIBILITY	.24*	.22*	.70*	.04	-.03	.09	.35*	1.00	
(9) ATTITUDE CHANGE	.11	-.08	.19*	.04	.08	.07	.41*	.30*	1.00

Figure 1

Path Model Using Attitude Change Scores

The first path coefficients shown are for the legalization of marijuana issue, the second for the change to semesters issue. An asterisk (*) indicates a path coefficient significant at $p = .05$, $N = 169$.

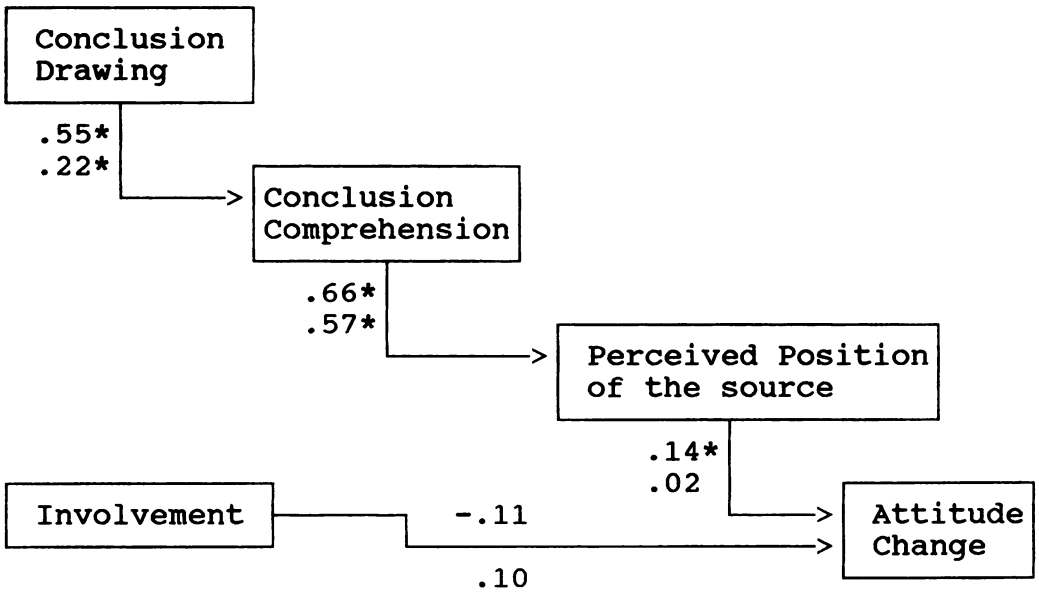
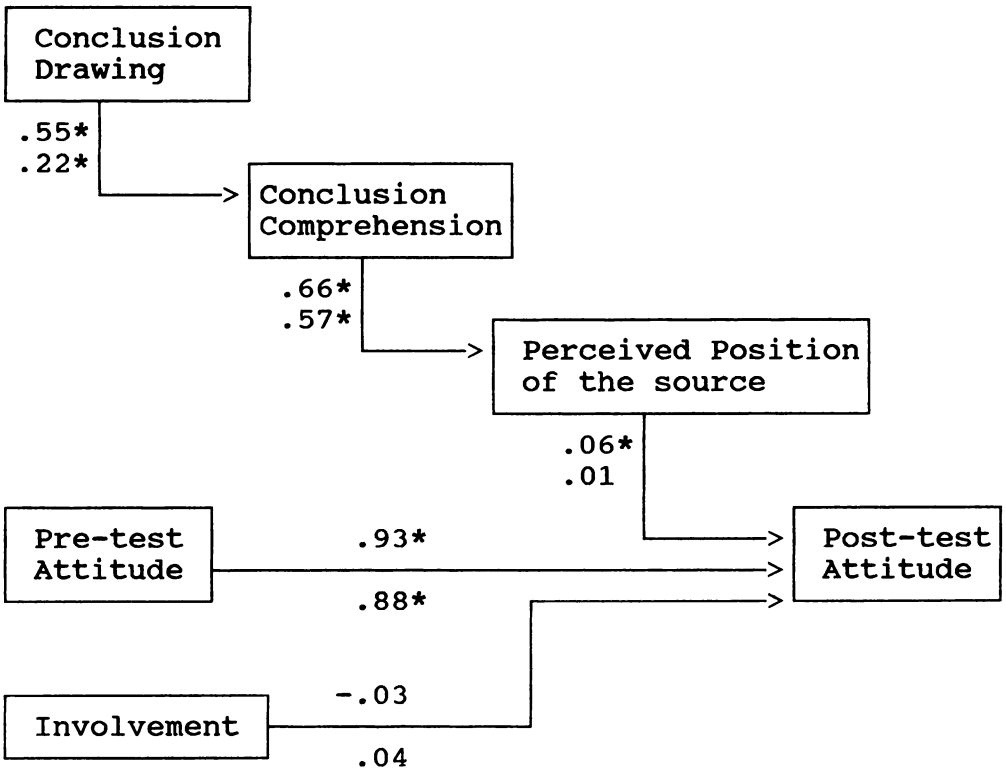


Figure 2

Path Model Using Post-test Attitude Scores

The first path coefficients shown are for the legalization of marijuana issue, the second for the change to semesters issue. An asterisk (*) indicates a path coefficient significant at $p = .05$.



path from involvement to attitude change was statistically significant. Finally, none of the correlations predicted by the model differed significantly from those observed in the data ($p = .05$).

The second model (Figure 2) also fit the data (for the marijuana topic, chi-square = 8.06, df = 7, $p > .10$; for the semester topic, chi-square = 4.08, df = 7, $p > .10$). Consistent with the first model all path coefficients were significant at $p < .05$ except the path from involvement to post-test attitude for both topics, and the path from perceived position of the source to attitude for the semester topic. Again, none of the correlations predicted by the model differed significantly ($p > .05$) from those observed in the data.

Because involvement did not have the anticipated impact on attitude, analyses were conducted with involvement removed from the models (Figures 3 and 4). With attitude change as the final dependent variable, chi-square = 1.32, df = 3, $p > .10$ for the marijuana topic, and chi-square = 1.86, df = 3, $p > .10$ for the semester topic. With post-test attitude as the final dependent variable, chi-square = 4.94, df = 5, $p > .10$ for the marijuana topic, and chi-square = 2.40, df = 5, $p > .10$ for the semester topic.

In each of the previous analyses no correlation predicted by a model differed significantly from the observed correlation, however, for the marijuana topic the

Figure 3

First Path Model With Involvement Removed

The first path coefficients shown are for the legalization of marijuana issue, the second for the change to semesters issue. An asterisk (*) indicates a path coefficient significant at $p = .05$, $N = 169$.

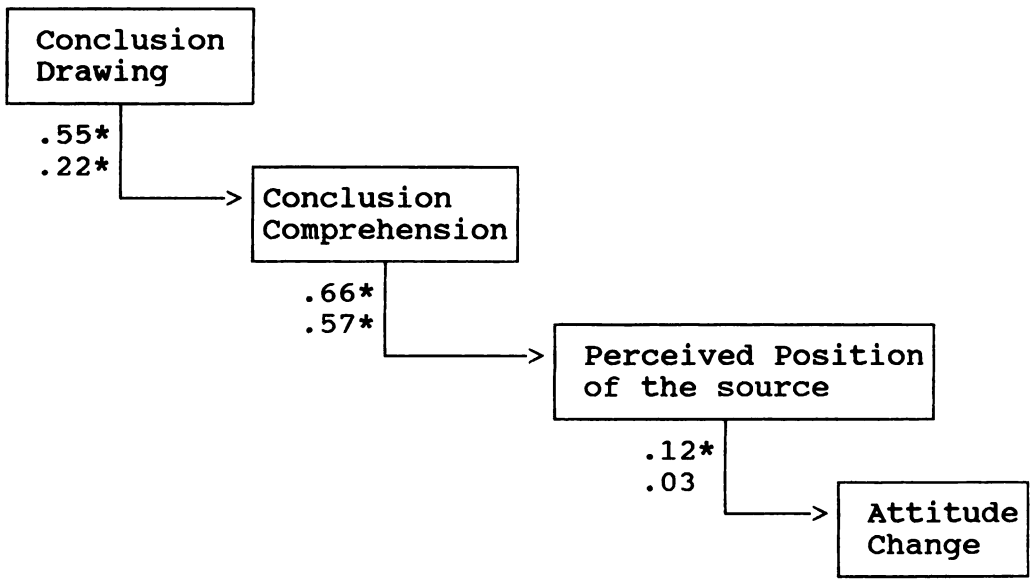
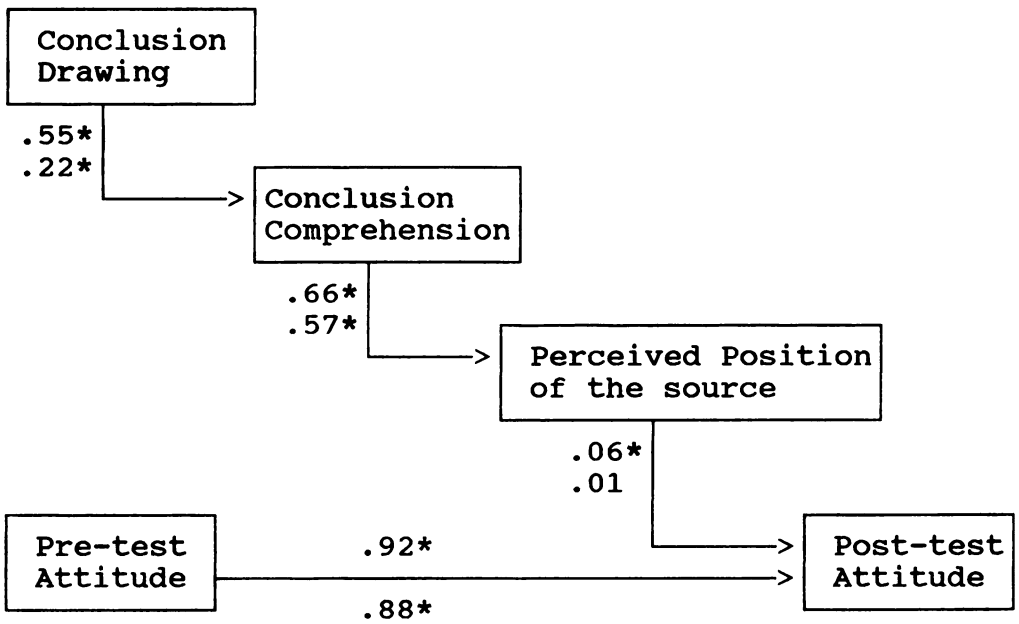


Figure 4

Second Path model With Involvement Removed

The first path coefficients shown are for the legalization of marijuana issue, the second for the change to semesters issue. An asterisk (*) indicates a path coefficient significant at p = .05, N = 169.



observed correlation between pre-test attitude and perceived position of the source differed from the predicted correlation by .20, approaching statistical significance (z = 1.84, p = .06). A causal link from pre-test attitude to perceived position of the source was not predicted, but an exploratory analysis seemed warranted because of the nearly significant difference statistically discussed previously and because of a significant zero-order correlation (r = .23, p < .01). Hence, a fourth causal model, the model in Figure 4 save an added causal path from pre-test attitude to perceived position of the source, was tested (Figure 5). This model also fit the data (chi-square = 1.50, df = 4, p > .10, and chi-square = 2.16, df = 4, p >. 10 for the legalization and semester topics respectively), and, more importantly, the greatest difference between a predicted and observed correlation was .09 (z = 1.01, p = .32) for the legalization of marijuana topic and .13 (z = 1.21, p = .23) for the semester change topic. In each case the largest error was for the link between conclusion drawing and perceived position of the author.

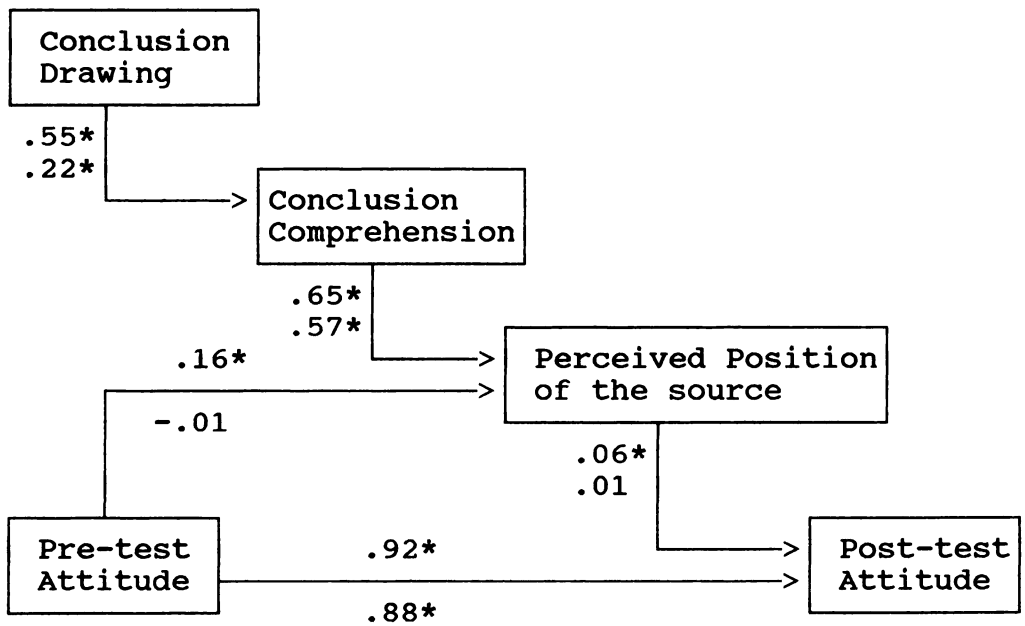
Left to be investigated was the role of source credibility. Conclusion drawing was observed to have no association with source credibility change (for the legalization of marijuana topic, r = -.01, p > .05; for the semester change topic, r = -.07, p > .05). The impact of conclusion drawing on post-test source credibility was also

examined with pre-test source credibility as a covariate. Again, no relationship was found (F = .26, p = .61).

Figure 5

Exploratory Path Model

The first path coefficients shown are for the legalization of marijuana issue, the second for the change to semesters issue. An asterisk (*) indicates a path coefficient significant at p = .05, N = 169.



DISCUSSION

The goal of this study was to clarify the relationship between conclusion drawing and attitude change. To some extent this goal was achieved, although the results were not perfectly consistent across topics. For the legalization of marijuana topic two causal models were found to be consistent with the data. One model indicates that two variables, conclusion comprehension and perceived position of the source, mediate the relationship between conclusion drawing and attitude change. A causal chain which includes, in order: conclusion drawing, conclusion comprehension, perceived position of the source, and attitude change was found to be consistent with the data. In detail, the more explicit the conclusion to a persuasive message, the better the conclusion is comprehended. Greater conclusion comprehension produces perceptions that the source of the message advocates a more extreme position. Last, perceptions that the source holds a more extreme position produce more attitude change.

The second causal model, conceptually similar to the first, was also found to be consistent with the legalization of marijuana data. The only difference between the models is that the first predicts attitude change from perceived position of the source, and the second predicts post-test

attitude from perceived position of the source and pre-test attitude.

Although post hoc, a third causal model was also found to be consistent with the data. Similar to the second model, the third model added a causal path from pre-test attitude to perceived position of the source. Such a link would be predicted by Social Judgment theorists (for a review see Kiesler, Collins & Miller, 1969), who argue that messages similar to one's own attitude will be assimilated, or perceived as even more similar to one's own attitude, but messages which are different from one's own attitude will be contrasted, or perceived as even more different from one's own attitude. Such a relationship was not observed, however. Instead, a linear relationship was observed, in which more positive pre-test attitudes were associated with perceptions that the source held a more positive attitude.

To reconcile the data with Social Judgment theory would require the conclusion that the messages were within the latitude of acceptance for most subjects. Given the distribution of pre-test scores (ranging from the top to the bottom of the scale for both topics), such a conclusion is unlikely. Because the third model was exploratory, replication is necessary. Further theoretical work is also necessary to explain the observed causal relationship from pre-test attitude to perceived position of the source that was observed here.

Considering the semester change topic, the same models were found to fit the data, but the path coefficients from perceived position of the source to attitude change and post-test attitude were not statistically significant. Finding an impact, however, was precluded by a ceiling effect in the measurement of perceived position of the source. The author's position was perceived as significantly more positive for the semester change issue at each level of conclusion drawing (*t*s range from 3.32 to 7.00, *p*s < .05) with 56 of 169 subjects scoring 42 on a scale from 6 to 42. Moreover, the distribution exhibited a significant negative skew (*p* (-1.76 < skew < -1.04) = .95). It may be that the subjects, all undergraduates, were better informed about the semester change topic and hence better able to discern the conclusion.

The hypothesized effects of involvement were not observed. Consistent with Kardes (1988), involvement was predicted to interact with conclusion drawing to affect conclusion comprehension, and to interact with perceived position of the source to affect attitude change. Neither prediction was consistent with the results. The difference between these results and Kardes' data may be due to the topic and the involvement induction used. Perhaps few of the subjects in Kardes' study had strong, pre-existing opinions on the topic, purchasing a compact disc player. If weaker pre-existing opinions were held, the involvement control would have been more successful and had an impact on

outcome variables. In this study the involvement control was unsuccessful, and data were analyzed using perceived involvement. Because perceived involvement, unlike experimentally controlled involvement, is susceptible to confounds, the effects of involvement may have been obscured. Once again, further study is necessary to determine if, or when, involvement interacts with conclusion drawing.

Finally, despite much conjecture by previous authors, conclusion drawing was not found to affect perceived source credibility. Although strong conclusions can never be drawn from just one study, indications are that the relationship between conclusion drawing and attitude change is not mediated by source credibility.

CONCLUSION

In sum, although some of the hypotheses were consistent with the data, others were not. As hypothesized, the relationship between conclusion drawing and attitudes was mediated by conclusion comprehension and perceived position of the message. This finding is consistent with the meta-analysis that found only a weak association between conclusion drawing and attitude change (in the meta-analysis, $\underline{r}$ = .082; for the marijuana topic, $\underline{r}$ = .08; for the semester topic, $\underline{r}$ = .04). The results of this study suggest that writers of persuasive messages should use explicit messages, or, at least, be very concerned with writing comprehensible ones.

The previous conjectures that implicit messages would be more persuasive were not consistent with the meta-analysis or the current study, but because conclusion drawing had such a strong impact on conclusion comprehension, implicit messages were virtually precluded from producing significant attitude change. If conclusion could be controlled independently of conclusion drawing, perhaps through the use of very simple messages, the hypothesized advantages of implicit messages might realized. Such a scenario is suggested by Linder and Worchel (1970) whose subjects were informed of the intended conclusions to implicit persuasive messages after having attempted to

discern the conclusion for themselves. Under these conditions, initially implicit but ultimately explicit messages were more persuasive than initially explicit messages.

Implicit messages might also hold a persuasive advantage when situational factors enhance the comprehensibility of the message conclusion. For example, when the speaker is known by audience members to hold a particular position or when audience members are very well informed on the topic, implicit messages might not suffer from reduced comprehension and might, therefore, produce greater attitude change. Investigation of the impact of conclusion drawing when no differences in conclusion comprehension exist is left to further study.

ENDNOTES

[1]Because Fine (1957) reports *p* values such as .02, .11, .06, etc., I assumed that $p < .10$ (for the effect of conclusion type on attitude change) implied $p > .09$. Two *F* values were used to reproduce the ANOVA table, one corresponding to $p = .10$ and one to $p = .09$. Because these two *F*s differed by little and produced an even smaller difference in *r*, they were averaged. This value was then used to calculate the effect size.

[2]The second model was included because of the unreliability of measurement of attitude change (for the marijuana topic, $\alpha = .32$; for the semester change topic, $\alpha = .49$).

APPENDICES

Appendix A

Legalization of Marijuana Message

(Double-underlined sections were removed from the explicit message for both the moderately and strongly implicit messages. Single-underlined sections were removed for the strongly implicit message only.)

I disagree with my opponents current position. The following are my reasons for disagreeing.

During prohibition, organized crime grew and profited through the illegal sale of alcohol. The illegal sale of alcohol provided crime syndicates with huge amounts of income. Today, organized crime remains a problem even though alcohol is now legal. One reason that organized crime still exists is that other sources of illegal income are available. That is, *organized crime still profits from the sale of illegal substances*. One such substance is marijuana. Therefore, to reduce the power of organized crime, marijuana should be legalized.

Americans value their personal freedom highly. In fact, our constitution guarantees our freedom and insures that the government cannot restrict our freedom unless it is for the good of all. Americans can even act in ways which are dangerous or harmful to themselves. For example, alcohol and tobacco use are legal despite the known dangers associated with both. On the other hand, other less dangerous substances are *illegal*. One such substance is marijuana. Since marijuana is less dangerous than alcohol and tobacco, marijuana use should also be legal.

Some people have argued that many immoral actions or "bad influences" often lead to illegal actions. For example, pornography has been said to lead to violent, sexual crimes. For this reason, those people have argued that all immoral actions should be outlawed. Usually, these people can give numerous actions which they consider immoral, and then argue that these immoral actions lead to illegal actions. However, many immoral actions do not lead illegal actions and *should remain legal*. One such immoral act is marijuana use, which has been *incorrectly* said to lead to heroin and cocaine use. Since marijuana use does *not* lead to heroin and cocaine use, marijuana use should be legal.

In conclusion, all of the preceding arguments support my position, that marijuana should be legalized.

Change to Semesters Message

(Double-underlined sections were removed from the explicit message for both the moderately and strongly implicit messages. Single-underlined sections were removed for the strongly implicit message only.)

I believe that a change in the current system is warranted. Here are my reasons for wanting a change.

One of the major functions of our institution is to give a quality education. In order to fulfill this function, professors should cover material in depth, providing a more rigorous and advanced viewpoint than given to high school students. However, time limitations often prevent professors from providing such extensive coverage of subjects. In many cases, professors are only able to skim over the necessary material and are *unable* to spend time on more interesting topics. The major source of the time limitation is the quarter system. Changing from the quarter system to the semester system would give professors time to teach better classes. Therefore, a change should be made from quarters to semesters.

Many students complain that tuition is too high. These students are having trouble affording college. One target of their complaints is the administration. Students claim that administrators waste too much money on irrelevant expenses. For example, high registration fees are much maligned by angry students. One of the main contributors to high administrative and registration costs is the quarter system. Changing from the quarter system to the semester system would reduce registration costs. Again, a calendar change should be made from quarters to semesters.

A third issue which I will address is academic progress. Increasingly, students are taking five and six years to graduate. However, the system was designed to allow students to graduate in four years. The complexity of the current system plays a part in delaying graduation. Students have *a multitude of requirements and options* which must be chosen with *inadequate advising*. To improve academic progress, a less complex system should be chosen. The quarter system contributes to complexity. Converting from the quarter system to the semester system would reduce complexity and improve academic progress. Hence, we should convert to a semester calendar.

In conclusion, I have given three arguments why a semester system is superior to a quarter system. Now is the time to change from a quarter system to a semester system.

Appendix B

Measure of Involvement

(An asterisk (*) indicates an item deleted based on confirmatory factor analysis.)

1.	involving	1	2	3	4	5	6	7 uninvolving
2.	unimportant	1	2	3	4	5	6	7 important
3.	relevant to you	1	2	3	4	5	6	7 not relevant to you
*4.	does not affect you	1	2	3	4	5	6	7 affects you
5.	matters	1	2	3	4	5	6	7 does not matter
*6.	impact on your life	1	2	3	4	5	6	7 no impact on life
7.	a concern of yours	1	2	3	4	5	6	7 no concern of yours
8.	significant	1	2	3	4	5	6	7 insignificant
*9.	worrisome	1	2	3	4	5	6	7 not worrisome

Measure of Source Credibility

(An asterisk (*) indicates an item deleted based on confirmatory factor analysis. Items 5, 6, and 7 were also deleted from the post-test measure of source credibility for the semester change issue.)

1.	believable	1	2	3	4	5	6	7 unbelievable
*2.	inaccurate	1	2	3	4	5	6	7 accurate
3.	unconvincing	1	2	3	4	5	6	7 convincing
4.	well-informed	1	2	3	4	5	6	7 poorly-informed
5.	unbiased	1	2	3	4	5	6	7 biased
6.	correct	1	2	3	4	5	6	7 incorrect
7.	knowledgeable	1	2	3	4	5	6	7 not knowledgeable
8.	untrustworthy	1	2	3	4	5	6	7 trustworthy

Measure of Attitude: Marijuana Topic

1. Marijuana should be legalized.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Marijuana should remain illegal.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Marijuana is harmful.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. There is nothing wrong with smoking marijuana.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. People who smoke marijuana should not be treated like criminals.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Americans have a right to smoke marijuana if they want to.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

Measure of Conclusion Comprehension: Marijuana Topic

(An asterisk (*) indicates an item deleted based on confirmatory factor analysis.)

*1. The author believes that prostitution should be legalized.

a. true b. false

*2. The main topic of the message was civil rights.

a. true b. false

3. More than anything else, the message was about marijuana.

a. true b. false

*4. According to the author, alcohol and tobacco should be illegal.

a. true b. false

5. The author's opinion is that marijuana should be legalized.

a. true b. false

*6. According to the author, pornography is dangerous.

a. true b. false

*7. The author thinks that all drugs should be legalized.

a. true b. false

8. The author's main point is that crime is a big problem in this country.

a. true b. false

Measure of Attitude: Semester Topic

(The high involvement items are shown. For the low involvement items, MSU was replaced by USC. An asterisk (*) indicates an item deleted based on confirmatory factor analysis.)

1. Changing to semesters at MSU is a good idea.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. MSU should not be changing to a semester system.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. MSU has used the quarter system and should continue to do so.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Changing to semesters will increase the quality of education at MSU

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

*5. I would rather have three 10-week terms than two 15-week terms every year.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. The advantages of the semester system outweigh the advantages of the quarter system.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

Measure of Comprehension: Semester Topic

(An asterisk (*) indicates an item deleted based on confirmatory factor analysis.)

*1. The author believes that the quality of education is low.

a. true b. false

2. The main topic of the message was college tuition.

a. true b. false

3. More than anything else, the message was about semester and quarter systems.

a. true b. false

*4. According to the author, there should be more uniformity in education.

a. true b. false

5. The author's opinion is that semester systems are better than quarter systems.

a. true b. false

*6. According to the author, education is more important than money.

a. true b. false

*7. The author thinks that the school year should not be interrupted by breaks.

a. true b. false

8. The author's main point is that education is a failure in this country.

a. true b. false

Appendix C

Message Topic Pre-test Items

1. Marijuana should be legalized.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Marijuana should remain illegal.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Marijuana is harmful

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. There is nothing wrong with smoking marijuana.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. People who smoke marijuana should not be treated like criminals.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Changing to semesters at MSU is a good idea.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. We should not be changing to a semester system.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. MSU has used the quarter system and should continue to do so.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Changing to semesters will increase the quality of education at MSU

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

10. The advantages of the semester system outweigh the advantages of the quarter system.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

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