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Patron: david.cook@ottawa.edu

Journal Title: The Southern communication journal

Volume: 56 Issue: 3

Month/Year: 3/1991 Pages: 219-229

Article: Author:

Article Title: Benoit 'Two tests of the mechanism of fluctuation theory'

Imprint: Boone, NC ; Southern States Communicatio

ILLiad Number: 91958467



Call #: Area -- v. 56; 1990/1991

Location: In

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Two Tests of the Mechanism of Inoculation Theory

William L. Benoit

Two studies were conducted on two controversial topics to test the hypothesized mechanism of resistance. No support was found for the assumption that resistance occurs by increasing the audiences' production of counterarguments to persuasive attacks. Furthermore, unlike McGuire's findings on cultural truism topics, refutation-same defenses were not substantially better at creating resistance to immediate persuasive attack than supportive defenses. Finally, neither level of audience involvement in the topic nor the audience's prior attitude toward the topic were found to influence the effectiveness of type of defense.

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INTRODUCTION¹

Resistance to persuasion has attracted an undeservedly small amount of work (see, e.g., Burgoon, Cohen, Miller, & Montgomery, 1978; Chase & Kelly, 1976; Tannenbaum, 1967; Ullman & Bodaken, 1975). McGuire's (1964) inoculation research program, though, is particularly well known, and arguably the source of more research into resistance to persuasion than any other theory. Inoculation theory posits that resistance is created by altering how the audience processes the information in the persuasive attack: refutational defenses increase the auditors' motivation and ability to produce counterarguments to a subsequent attack.

McGuire's predictions were tested on cultural truisms, topics on which auditors have never heard their beliefs questioned (e.g., it is a good idea to brush one's teeth). On such topics, refutational messages, which mention attacking arguments in the course of refuting them, alert auditors to the fact that their attitudes are susceptible to attack. This is believed to motivate auditors to develop attitude defenses. Refutational defenses also enhance the ability to create attitude defenses by providing illustrations of refuted attacking arguments. Furthermore, if the arguments refuted in the defensive message happen to be present in the attack (a "refutation-same" defense), the auditors are provided with ready-made defenses for the attack.

A supportive defense, on the other hand, bolsters existing attitudes without acknowledging the existence of, or refuting, opposing arguments. Consequently, it neither motivates auditors to develop defenses against attack nor provides assistance in constructing such defenses. Hence, auditors exposed to refutational defenses should produce more counterarguments to subsequent persuasive attacks than those who received supportive defenses. These counterarguments impair the effectiveness of the persuasive attack, resulting in greater resistance. Research generally found refutational defenses superior to supportive ones at creating resistance on cultural truisms (see McGuire, 1964; Tannenbaum, 1967; Suedfeld & Borrie, 1978).

This theory is consistent with the increasingly popular cognitive response approach to persuasion (see, e.g., Benoit, 1985, 1987, in press; Perloff & Brock, 1980; Petty & Cacioppo, 1986a, 1986b; Petty, Ostrom, & Brock, 1981). Considerable research supports the claim that cognitive responses influence attitude change, as Cacioppo, Harkins, and Petty explain:

Manipulations that affect cognitive responses also affect persuasion (Calder, et al., 1974; Petty, et al., 1976; Roberts & Maccoby, 1973); and . . . implementation of statistical procedures to assess causal orderings of cognitive responses and persuasion has indicated that cognitive responses may have mediated yielding to persuasion (e.g., Greenwald, 1968; Osterhuse & Brock, 1970) but that the reverse causal ordering was not operating (Cacioppo & Petty, 1979a, 1979b; Petty & Cacioppo, 1977) (1981, p. 49).

This suggests that the audience's cognitive responses to the persuasive message can be important factors in determining the amount of attitude change, a proposition consistent with inoculation theory.

THE MECHANISM OF INOCULATION THEORY: AUDIENCE COUNTERARGUMENTS

No attempt has been made to test inoculation theory's hypothesized mechanism. McGuire's theory postulates that receivers must be motivated by threat from actual opposing arguments (or forewarning of an impending attack) and trained by example or practice to produce counterarguments (or unfavorable cognitive responses) to persuasive attacks. However, as Smith recognizes, "Despite the centrality of this counterargument assumption, McGuire provided no evidence that his motivational and informational pretreatments, in fact, increased the ability and willingness of people to counterargue against persuasive attacks" (1982, pp. 294-95).

Careful reading of McGuire's research reveals only indirect empirical evidence on this question. Papageorgis and McGuire (1961) report that participants who received refutational defenses perceived the attacking message as less credible than participants in the attack-only condition. Unfortunately, this study concerns refutation-same and refutation-different defenses, not supportive and refutational defenses. More importantly, this finding does not necessarily demonstrate that inoculated participants had greater motivation to counterargue the message or produced more counterarguments because perceived message credibility is not the same as motivation to counterargue or production of counterarguments.

Papageorgis and McGuire asked participants to list all of the arguments they could think of *in support of the cultural truism* (as did Rogers & Thistlethwaite, 1969). However, this procedure seems better designed to test the effects of supportive messages, which bolster the cultural truism, than refutational ones, which promote production of counterarguments to attacking messages. A stronger test would have had participants list the arguments they had mustered *against the attack*, assessing their ability to counterargue the attacking message (as Wyer, 1974, suggests). Nor are more recent studies (e.g., Burgoon & Chase 1973; Pfau & Burgoon, 1988; Pfau, Kenski, Nitz, & Sorenson, 1990; Pryor & Steinfatt, 1978) designed to assess cognitive responses (audience counterargumentation) to the attacking message.

Modest support for inoculation theory's assumed mechanism can be derived from Cacioppo (1979), who reports that increased resistance from manipulation of heart rate was related to counterargument production. However, he was not studying defensive messages, and did not compare the counterarguments prompted by refutational and supportive messages.

Thus far, there has been no test of the assumed mechanism of inoculation theory: that refutational defenses provoke more counterarguments to attacking

messages than supportive defenses. Given recent interest in the cognitive response model and assessment of receiver counterargument production (see, e.g., Benoit, 1985; Benoit, 1987; Perloff & Brock, 1980; Petty & Cacioppo, 1986a, 1986b; Petty, Ostrom, & Brock, 1981), it is appropriate to undertake research in this area.

This paper reports two separate studies, on two different controversial topics, conducted to test this presumed mechanism of inoculation theory. Each study also investigated the relative effectiveness of supportive and refutational defenses. Finally, each study tested a unique hypothesis, as discussed in the reports of these two studies.²

Extension of inoculation theory to controversial topics necessitates an adaptation of McGuire's terminology. In his studies of cultural truisms, supportive and refutational defenses always reinforced the audience's existing attitudes in favor of the cultural truisms. However, because an audience's attitudes on a controversial topic ordinarily should be diverse, this approach cannot be used. In the research reported here, the defenses are defined in contrast to the attacking message (Study 2 specifically addresses the question of whether initial audience agreement influences the effectiveness of refutational and supportive defenses).

STUDY 1

This study investigates the ability of refutational and supportive defenses to create resistance on a controversial topic. Assessment of participants' unfavorable cognitive responses to the attacking message tests the hypothesis that auditors' unfavorable cognitive responses (counterarguments) are related to resistance to persuasion. Furthermore, post hoc analysis of data tests the possibility that type of defense interacts with level of audience involvement in the topic.

Method

This experiment employs three conditions: supportive defense followed by an attack, refutational defense followed by an attack, and no defense (attack only). A controversial topic (abortion) was selected on the basis of a pre-test (administered to a separate group of students) indicating that participants displayed diverse attitudes (ranging from highly favorable to highly unfavorable) and diverse levels of involvement in the topic. The following hypotheses were tested:

- H1: Participants exposed to a refutational or supportive defense will be more resistant to persuasion than those who receive no defensive message on a controversial topic (but there will be no difference between the refutational and supportive defenses).
- H2: Participants in conditions conferring resistance will report more counterarguments to the attacking message than those in conditions which do not confer resistance on a controversial topic.

Participants were 304 communication students (a few questionnaire items were blank, which resulted in slightly different degrees of freedom for the significance tests). In the first two conditions, participants read a supportive or refutational defensive message. Refutational defenses mention and refute opposing arguments, while supportive defenses only bolster the attitudes to be defended. This manipulation of type of defense is consistent with that employed in McGuire's work (the refutational defenses were refutation-same rather than refutation-different messages—see McGuire, 1964). The defensive message was followed by an immediate attack (rather than a delayed attack—cf. McGuire, 1964). In the third condition participants read only the attacking message. The controversial topic employed in this experiment was: "Abortion should be permitted only in cases of rape, incest, or

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Method

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when the mother's life would be endangered by the birth." All three messages were the same length, one page of single-spaced text. A manipulation check showed that there was no perceived difference in the quality of the two defensive messages. After reading the message or messages, participants completed the attitude assessment, which was followed by a thought-listing measure for unfavorable cognitive responses during the second speech, and then by involvement assessments and other dependent measures. (For a discussion of cognitive response assessment, see Cacioppo and Petty [1981] or Miller and Baron [1973]).

RESULTS

The first hypothesis was supported. There was a significant main effect for defense ($F[2,301]=13.77$, $p<.05$, $R^2=.08$), and the Duncan Multiple Range post hoc test revealed that neither of the two defensive conditions was significantly different from the other (supportive 5.75; refutational 5.59), but both were significantly different from the attack only condition (3.14). This suggests that both refutational and supportive defenses were successful in conferring resistance to a subsequent persuasive attack. Further confirmation is provided by an assessment of behavioral intentions ("Would you seek or recommend an abortion?"): attack-only participants were more willing to do so (2.28) than those in either defensive condition (Supportive 1.96; Refutative 1.90; $F[2,297]=5.14$, $p<.05$, $R^2=.006$).

The second hypothesis was not confirmed ($F[2,301]=1.02$, $p>.05$). There was no significant difference between any of the three conditions on production of negative thoughts or counterarguments (supportive 1.59; refutational 1.90; attack only 1.60). The power of this test to detect small, medium, and large effects sizes at the .05 level with a two-tailed test is .09, .81, and .99, respectively (Cohen, 1977).

Secondary Analysis of Audience Involvement in Topic

Although Study 1 failed to support the claim that counterarguments mediate resistance in general, it is possible that counterarguments mediate resistance for some auditors. People who are highly involved in the topic are motivated to expend greater cognitive effort processing a message (and developing defenses) than those who are uninvolved (see, e.g., Petty & Cacioppo, 1979a, 1979b, 1984; Petty, Cacioppo, & Goldman, 1981; Petty, Cacioppo, & Schumann, 1983). Hence, highly involved persons should actively process an attacking message regardless of type of defensive message they receive (that is, their motivation to scrutinize a persuasive attack probably cannot be significantly increased by a refutational defense). Highly uninvolved individuals, on the other hand, are unlikely to expend much effort thinking about an attacking message. Even a refutational defense would have difficulty getting such auditors to carefully scrutinize a persuasive attack on this type of topic. Thus, the motivational qualities of refutational defenses may work most effectively on moderately involved persons. The test of hypothesis 2 may not have revealed a possible effect of a refutational defense on counterarguments for moderately involved auditors. Since this study collected data on involvement in the topic, this possibility can be tested. This analysis leads to the next three hypotheses:

- H3: On a controversial topic, participants who are more highly involved expend more cognitive effort processing messages than those who are less highly involved.
- H4: On a controversial topic, refutational defenses create more resistance than supportive ones for moderately involved than for either highly involved or highly uninvolved participants.
- H5: On a controversial topic, moderately involved participants in the refutational condition will report more counterarguments to an attack than

moderately involved participants in the supportive condition; there will be no difference in counter argument production between refutational and supportive defenses for either highly involved or highly uninvolved participants.

The third hypothesis tests the relationship between audience involvement and cognitive response. Hypothesis 4 tests the possibility that refutational defenses are superior to supportive ones only with moderately involved participants. The last hypothesis investigates the role of cognitive responses in any resistance conferred.

Participants were divided into three involvement groups (high, medium, and low) after the data were collected. Cut-off points were selected with two criteria in mind: each involvement group should span approximately one-third of the involvement scale, and about one-third of the participants in the supportive, refutational, and attack-only conditions should fall in each involvement condition.

The third hypothesis was confirmed. Participants of different involvement levels report differential amounts of effort listening to the attacking message ($F[2,301]=14.7, p<.05, R^2=0.09$) and differential amounts of energy evaluating it ($F[2,301]=18.06, p<.05, R^2=.11$). The Duncan Multiple Range post hoc test reveals that highly involved participants scored higher on both variables than moderately involved participants, and that moderately involved participants scored higher on both variables than participants of low involvement. The means are displayed in Table 1.

Hypothesis 4 was not supported. The hypothesis predicts an interaction between defense and involvement, which did not occur ($F[4,299]=0.51, p>.05$). The refutational defense failed to confer significantly more resistance with moderately involved than either highly involved or highly uninvolved participants (see Table 2). Since the fourth hypothesis was not confirmed, it is not surprising that the last one was not supported ($F[4,299]=0.70, p>.05$). Moderately involved participants did not report greater counterarguing. These results are displayed in Table 2. The power of these tests to detect small, medium, and large effects sizes at the .05 level with a two-tailed test is .12, .94, and .99, respectively (Cohen, 1977).

Discussion of Study 1

This study found that both refutational and supportive defenses are capable of inducing resistance on a controversial topic. This means that the superiority of refutational defenses consistently found with McGuire's cultural truisms was not confirmed. Since auditors had long ago discovered that opposing positions existed on this (controversial) topic, the refutational defense does not possess any significant motivating ability (compared with the supportive defense).

More importantly, no support was found for the assumed mechanism of resistance. Both refutational and supportive defenses created significant resistance to persuasion, compared with the attack only group. However, neither defense provoked greater counterarguing against the attacking message. Finally, no effect of

TABLE 1 Mean Cognitive Activity During Attack by Involvement Level

Involvement Level	Cognitive Effort	
	Listening to Attack	Evaluating Attack
High (N = 96)	9.42 A	9.30 A
Medium (N = 115)	8.41 B	8.39 B
Low (N = 103)	7.65 C	7.53 C

Means with different letters are significantly different.
 Scores ranged from 0-11, with higher numbers reflecting greater effort.

TABLE 2 Attitude and Counterarguments by Defense and Involvement

Type of Defense	Attitude	Counterarguments
<u>Involvement Level</u>		
Supportive		
High	5.41 A ¹	1.54
Medium	5.72 A	1.62
Low	6.10 A	1.63
Refutational		
High	5.55 A	1.85
Medium	5.86 A	2.05
Low	5.32 A	1.79
Attack Only		
High	3.94 B	1.81
Medium	2.88 B	1.19
Low	2.96 B	2.00

Means with different letters are significantly different.

There were no differences in counterargument production.

¹Scores ranged from 0-11.

initial involvement level on resistance to persuasion was detected. While involvement did influence cognitive processing, it did not affect production of counterarguments.

STUDY 2

This experiment provides an additional test of the role of counterarguments in resistance and the relative effectiveness of refutational and supportive defenses. Furthermore, it investigates the influence of prior attitude on resistance to persuasion.

Method

This study employs a three by two design. First, it uses three message conditions: supportive defense followed by an attack, refutational defense followed by an attack, and no defense (attack only). Second, participants were divided on the basis of a pretest into groups favorable and unfavorable to the defense in order to test the final hypothesis. The insanity defense in criminal trials was selected as the controversial topic for this study based on a pretest using a separate group of participants, which revealed that participants possessed diverse attitudes and different levels of involvement in the topic. This study conducts additional tests of Hypothesis 1 (both refutational and supportive defenses create resistance to the persuasive attack) and Hypothesis 2 (defenses that create resistance induce more counterarguments to the persuasive attack).

The final hypothesis is advanced to investigate the possibility that effectiveness of defense depends upon the audience's initial attitude toward the topic (i.e., that audiences initially favorable to the defense might be made more resistant by a supportive defense, while audiences unfavorable to the defense might be more susceptible to a refutational defense, or vice versa). Given the difference between cultural truism and controversial topics discussed earlier, and the fact that this study defines defensive messages in contrast to attacking, it was appropriate to test the effect of audience attitude on defense and resistance.

H6: There will be an interaction between prior attitude and effectiveness of type of defense on a controversial topic.

Participants were 178 students in undergraduate communication courses. After assessing their initial attitudes, participants in the first two conditions read a defensive message (either supportive or refutational). Consistent with McGuire's manipulation, refutational defenses mention and refute opposing arguments, while supportive defenses bolster the attitudes to be defended. As with Study 1, a refutation-same defense and an immediate attack was used. In the third condition participants read only the attacking message. The controversial topic employed in this experiment was: "The insanity defense should be *outlawed* in criminal trials." All three messages were the same length, one page of single-spaced text. A manipulation check showed that there was no significant difference in the quality of the two defensive messages. After reading the attacking message, participants completed the attitude assessment, which was followed by a thought-listing measure for cognitive responses during the second speech (to measure counterarguments to the attacking speech), and then other dependent measures.

Results

As in Study 1, Hypothesis One was supported in Study 2: there was a significant main effect for defense ($F[2,175]=8.31, p<.05, R^2=.09$). The Duncan Multiple Range post hoc test revealed that both supportive and refutational defenses generated resistance, but did not differ significantly from each other. This finding was confirmed by two assessments of behavioral intentions. Participants were instructed to assume that they were jurors, and asked whether they would send a defendant they believed to be insane to a mental hospital or to jail. Participants in either defense were more likely to recommend a hospital than those in the attack only condition ($F[2,175]=4.12, p<.05, R^2=.04$). In the second behavioral intent assessment, participants receiving either defensive message were more likely to release a defendant after a cure that send them to jail ($F[2,174]=3.89, p<.05, R^2=.04$) than participants in the attack only condition. See Table 3 for these means.

Study 2 failed to confirm the second hypothesis ($F[2,175]=2.33, p>.05$). There was no significant difference in production of unfavorable thoughts or counterarguments between any of the three conditions (refutational defense, supportive defense, or attack only). The means are displayed in Table 3. The power of this test to detect small, medium, and large effects at .05 with a two-tailed test is .11, .88, and .99, respectively (Cohen, 1977).

Finally, Hypothesis 6 was not supported. There was no interaction between prior attitude and effectiveness of defense in creating resistance to persuasion on a controversial topic ($F[4,174]=1.90, p>.05$). The power of this test to detect small,

TABLE 3 Attitude, Behavioral Intention, and Counterarguments by Defense

Defense	Dependent Measure			
	Attitude	Behavior 1	Behavior 2	Counterarguments
Refutational (N=60)	5.37 ¹ A	7.08 ¹ A	1.67 A	1.58
Supportive (N=60)	4.93 A	7.10 A	1.59 A	0.93
Attack Only (N=58)	3.41 B	5.53 B	1.34 B	1.14

Attitude means with different letters are significantly different.

There were no differences in counterargument production.

¹Scores ranged from 0-11.

medium, and large effects at .05 with a two-tailed test is .11, .88, and .99, respectively (Cohen, 1977).

Discussion of Study 2

The data from this study indicate that both refutational and supportive defenses are capable of inducing resistance on a controversial topic, but the superiority of refutational defenses was not confirmed. As suggested earlier, auditors are aware that opposing positions exist on controversial topics, so refutational defenses possess no special motivating ability, compared with the supportive defenses.

As in Study 1, the data reveal that defenses creating resistance (both refutational and supportive) did not motivate participants to produce more counterarguments in response to the attacking message. Hence, there is no evidence for the proposed mechanism of resistance to persuasion.

The fact that the sixth hypothesis was not confirmed means simply that, on controversial topics, prior attitude does not appear to confound defense. In other words, we may not need one set of theoretical imperatives for those promoting resistance in auditors opposed and another set for those promoting resistance in auditors in agreement with their position. Of course, as researchers investigate factors other than broad approach (refutational versus supportive) we may need to make these distinctions. This provides some reassurance concerning the way in which refutational and supportive defenses were operationalized in these two studies.

CONCLUSION

No empirical support was found in studies on two different controversial topics for the proposed mechanism of resistance: increasing the audience's production of counterarguments (negative cognitive responses) to the attacking message.³ The failure to confirm inoculation theory's hypothesized mechanism for inducing resistance points to the need for another theoretical approach to understanding the nature of resistance to persuasion on controversial topics. For example, it might be useful to adopt an information integration approach to resistance, as suggested in Farkas and Anderson (1976).

Furthermore, the results reported in the two studies reported here contribute to the growing body of evidence that the superiority of refutational over supportive defenses may not extend to controversial topics. Four studies on controversial topics found no difference between supportive and refutational defenses (Beatty & Adams, 1977; Burgoon & Chase, 1973; Burgoon & King, 1974; Thistlethwaite, Kemenetzky, & Schmidt, 1956). Three other studies report mixed results. Crane (1962) reports no differences between supportive and refutational defenses in six comparisons, an advantage for refutational in three comparisons, and an advantage for supportive in one comparison. Sawyer (1973) found refutational defenses to be superior to supportive ones in but one of four conditions. Pryor and Steinfatt (1978) investigate resistance with cultural truisms (high belief), topics on which participants agree moderately (middle belief), and topics on which the audience was uncertain (low belief). The hypothesis that refutational defenses would promote more resistance than supportive defenses on high and mid-level beliefs was not confirmed. On low level belief topics, refutational but not supportive defenses created resistance. Only McCroskey, Young, and Scott (1972) report unequivocal support for superiority of refutational over the supportive defense on a controversial topic. It may be that superiority of refutational over supportive defenses can be expected with confidence only on cultural truisms.

McGuire's research on forewarning and resistance (McGuire & Papageorgis, 1962) provides further support for this claim. For cultural truisms, a refutational defense

was no better at creating resistance than a supportive defense that included forewarning of an impending attack. This suggests that knowledge of an opposing side—produced either by refuting it or forewarning of it—may be sufficient for either a refutational or supportive message to create resistance. On controversial topics, of course, the audience is already aware of the existence of an opposing side.

Study 1 found that the audience's initial level of involvement in the topic did not affect counterarguing or the relative efficacy of supportive and refutational defenses, and Study 2 found that the audience's initial attitude toward the topic does not alter these results. Finally, both studies demonstrated that significant amounts of resistance can be created through refutational and supportive defensive messages on controversial topics.

NOTES

¹These studies were presented separately at conventions of the Speech Communication Association. This research was supported by a grant from the National Institutes of Mental Health (# MSMA 1 R03 MH41753-010A). The author expresses appreciation to Dan Panici and Paul Gullifor for help in the data collection.

²The recommendation that experiments employ multiple messages (Jackson & Jacobs, 1983; Jackson, O'Keefe, & Jacobs, 1988; O'Keefe, Jackson, & Jacobs, 1988; Jackson, O'Keefe, Jacobs, & Brashers, 1989) has been accepted in much, though not all, of the communication discipline (cf. Bradac, 1983; Hewes, 1983; Hunter, Hamilton, & Allen, 1989; or Morley, 1988a, 1988b). Furthermore, in one study, use of fifteen different messages failed to detect any effects from different messages (Allen, Agee, Dillon, Ray, Shanahan, & Stafford, 1989). Hence, the major hypothesis in this study (motivation and ability to counterargue) was tested with two different sets of messages on two different topics, while ancillary hypothesis (involvement, prior audience attitude) employed but one set of messages. Some readers may wish to discount the results for hypotheses tested with but one set of messages.

³Nor is this necessarily an artifact of the controversial topics used in this study. Another study using two cultural truism messages obtained from McGuire failed to find that resistance was accompanied by more unfavorable cognitive responses, or counterarguments (Benoit, 1988).

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