The Effects of Temporal Delay upon Denial as a Means of Restoring Beliefs Following Successful Persuasion

Summer 1981

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THE EFFECTS OF TEMPORAL DELAY UPON DENIAL AS A MEANS OF RESTORING BELIEFS FOLLOWING SUCCESSFUL PERSUASION

BY

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B.A., University of Central Florida, 1974

THESIS
Submitted in partial fulfillment of the requirements for the degree of Master of Arts: Communication in the Graduate Studies Program of the College of Arts and Sciences at the University of Central Florida; Orlando, Florida

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ABSTRACT

Students in basic speech courses served as subjects in a study designed to test the efficacy of denial as a restorative agent after subjects' exposure to a belief-lowering attack. Denial was operationalized in two ways: (a) as a simple statement whereby the ostensible source of the attack message denied any connection with the attack, and (b) as a denial plus counter-assertion where the source additionally asserted an opinion directly contrary to that expressed in the attack. Denial treatments were administered either immediately, two days, or seven days after subjects' receipt of the attack message. While the immediate simple denial treatment produced Type 1 resistance, no differences were found in final belief levels across the six restorative treatments. The data failed to support the predicted superiority of denial plus counter-assertion over simple denial as a restorer of belief.
ACKNOWLEDGMENTS

The cooperation of many people contributed to the successful completion of this thesis.

In Tampa:

Rick Bogue, graduate assistant in the Communication Department at the University of South Florida, kindly gave class time for data collection.

Professor James Parrish, my friend and "boss" at the University of South Florida, was unflagging in his encouragement and on numerous occasions helped me cross barriers that might otherwise have blocked my way.

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In Orlando:

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Bert Pryor, my thesis director, never lost confidence in me; his guidance and encouragement was the motivating force which enabled me to complete this project on time.

My sincerest thanks go to all of these people.
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INTRODUCTION

Persuasion has long been a subject of interest both to layperson and professional, private citizen and public figure alike. Ever since comically-depicted Neanderthal man wielded a club to make his point, humans have been searching for the key to most effectively influencing others. From selling used cars to campaigning for the presidency, success has come to mean a well-honed persuasive tactic.

As if the effort to perfect persuasive ability has not been difficult enough, people have constantly struggled to resist falling prey to the will of others. We have, in some cases, educated ourselves as to alternatives, opened ourselves to debate, and even waged full-scale war rather than be prevailed upon. But in more cases than not, we have attempted simply to protect our beliefs by closing our eyes and ears and avoiding exposure to arguments which would have us change our way of thinking. Festinger (1957), Janis (1957), and Klapper (1957) have each shown us that, when left to our own designs, we will indeed selectively expose ourselves to information so as to avoid contact with material that would threaten our already comfortably-held beliefs.
The success of this defense-by-avoidance tactic in attempts to resist persuasion depends largely upon a person's ability to continue to live in an ideologically monolithic environment. What happens to that person when he or she is unavoidably exposed to contrary information is the question posed by McGuire and Papageorgis in their 1961 article "The Relative Efficacy of Various Types of Prior Belief-Defense in Producing Immunity Against Persuasion." This article was the first in a line of research which offset the struggle for perfecting the art of persuasion with the struggle to understand and refine our abilities to resist the same.

McGuire's work centered around what he termed "cultural truisms" or generally accepted beliefs about various health practices. These include belief in the beneficial effects of penicillin and in the advisability of, respectively, annual chest X-rays for the detection of tuberculosis, toothbrushing after every meal to prevent decay, and annual medical check-ups even in the absence of illness. McGuire contended that the maintenance of these unquestioned beliefs in a noncontroversial environment makes them particularly susceptible to attack. Because the individual is unmotivated and unpracticed in defending these beliefs, providing him or her with supportive material prior to an attack only belabors the obvious and can even make the individual more vulnerable by enhancing his or her level of confidence. But, McGuire reasons, pre-exposure
to weakened forms of attacking arguments could alert the individual to the vulnerability of his or her belief, motivating the recipient to "prepare" a defense. These arguments could be either the same as or different than the ones contained in the subsequent attack message. McGuire likened this procedure to biological immunization where a person is inoculated with a weakened form of a virus in order to be immunized against that virus. In the 1961 experiment, McGuire and Papageorgis found support for this predicted superiority of a refutational pre-treatment over a purely supportive one in inducing resistance to persuasion.

In the years since 1961, many articles have appeared enlarging upon the theme of resistance to persuasion. McGuire and his associates themselves tested numerous hypotheses deriving from his "inoculation theory." Other researchers, no longer content to fill the literature with offensive game plans, also began to develop various strategies for producing resistance to persuasion. And, in the process of this undertaking, a third aspect in the field of persuasion took shape: the possibility of restoring beliefs following successful persuasive attempts.

Again, it was McGuire (1961) who first explored the idea that a subject's belief could be restored after exposure to a successful attack. Once more employing health truisms and refutational defenses, McGuire reversed the order of his immunization sequence, exposing subjects to the defense-provoking message immediately after the attack. Comparing
the data on the effects of restoration with immunization data collected in the same experiment, McGuire found the two sequences to be equal in effectiveness.

Using only one of McGuire's health truisms, Tannenbaum and Norris (1965) tested both immunization and restoration sequences by exposing subjects to a direct refutation of the same arguments contained in the attack message. Results indicated that this refutational-same defense was significantly more effective as an immunizer than as a restorer of beliefs. In a related experiment, Infante (1975) predicted superiority of immunization over restoration but like McGuire found no difference in the effects of the two sequences when employing a refutational-same defense.

Pryor and Lander (Note 1) attempted to account for these conflicting results which were unexpected in three experiments using the same defense type and with no time delay between messages. They point out that in McGuire's as in Infante's experiment the attack-only control condition produced a mean belief level that, while significantly lower than the initial belief, did not fall below the midpoint of the employed linear scale. On the other hand, the mean belief level of Tannenbaum's attack-only condition fell below 5 on a scale of 1 (definitely disagree) to 15 (definitely agree). Pryor and Lander concluded that, in Tannenbaum's experiment, the once-held belief in the advisability of undergoing an annual chest X-ray had become a
disbelief, thereby diminishing the comparative efficacy of the restoration over the immunization sequence. They extrapolate:

It seems reasonable that the restoration sequence would equal the effectiveness of the immunization sequence only when the impact of an attack message does not create a disbelief. That is, while the defense message is normally capable of warding off effects of an attack, it may not be capable of changing a belief. In effect, a defense message which would have been belief-congruent had it been administered prior to the attack, becomes belief-discrepant after a massively effective attack. (Note 1)

In testing this rationale, Pryor and Lander used two of McGuire's original issues: annual chest X-rays which pilot tests identified as being particularly susceptible to attack and use of penicillin which had proved to be moderately susceptible. Additionally, they incorporated a variable important to the present research—a time interval between messages. Besides the immediate immunization and the immediate restoration sequences, one group of subjects received the refutational defense message two days after the attack and another group seven afterward. In addition to their hypotheses concerning the relative efficacy of restoration versus immunization where the attack changes initial belief to disbelief, Pryor and Lander predicted that the superiority of the immunization sequence would increase as time increased between attack and defense.

Analysis of the data confirmed the results of McGuire and Infante's earlier studies: When the attack reduced the extremity of the belief, but did not create a disbelief, restoration and
immunization sequences were equal in effectiveness in maintaining the initial belief level. But, while immediate immunization was expected to be superior to immediate restoration when the attack changed the initial belief to a disbelief, the difference between the two sequence means was negligible and, moreover, in the opposite direction to that predicted. The trend of the three restoration means, though not significant, was as predicted toward increased superiority of immunization as the time interval between attack and defense messages increased.

Just as McGuire likened the exposing of subjects to defensive messages prior to attacks to biological immunization, Pryor and Lander (Note 1) compared the restoration sequence to medical resuscitation. They point out that the same two factors which affect the success of resuscitating heart attack and drowning victims, for instance, are also those which mediate the effects of attempted belief restoration: severity of the attack and promptness of counter-measure application.

When Pryor and Lander described the application of a refutational defense treatment following a massively effective attack as belief-discrepant, they touched upon another body of research which has also played a role in resistance theory: that dealing with the principle of congruity (Osgood & Tannenbaum, 1955). Based upon the human being's propensity to minimize cognitive inconsistency and to move toward consistency (Tannenbaum, 1967, p. 272), this principle was first developed to account for
the attitude change resulting from a communication situation in which

an identifiable source makes an assertion about some concept or object. Prior to the exposure to such a message, the individual has attitudes toward any number of potential sources or concepts, which he can maintain without any problem. The issue of congruity arises with the assertion of the message; it is only then that the particular source and the particular concept are brought into an evaluative relationship to each other as the source assumes a position favorable or unfavorable to the concept. (Tannenbaum, 1967, p. 273)

Given, for example, the situation where initial attitudes toward the source and the concept are favorable and where the direction of the assertion is also favorable, no inconsistency is generated and, therefore, no pressure toward change results. But what if the direction of the assertion is negative? The theory predicts the direction of attitude change will be always toward increased congruity and will be dependent upon initial attitudes toward the source, the concept, and the assertion which links them (Tannenbaum, 1967, p. 273).

The research which applies consistency theory to the problem of reducing persuasive effects deals primarily with the communication situation proposed above: a favorably evaluated source makes a strongly negative assertion against a favorably evaluated concept (Tannenbaum, 1967, p. 277). This is an inherently incongruous situation which, in the context of resistance research, could, if left untreated, result in a negative shift
in attitude toward the concept, i.e., a reduction in initial belief level.

Working from the premise that it is the incongruity itself which exerts pressure toward attitude change, Tannenbaum, Macaulay, and Norris (1966) conjectured that whatever means might be used to reduce this incongruity might also serve to reduce the degree of change in attitude toward the concept. Accordingly, they designed four strategies which might function to reduce this inconsistency and with it the pressure to shift negatively in attitude toward the concept. They proposed (a) a concept boost treatment, similar to McGuire's supportive defense, in which the original belief level might be intensified to outweigh the value of the negative assertion; (b) a refutation treatment, which, by expressly repudiating arguments in the attack, would de-value the importance of that message; (c) a source derogation treatment, which, by lowering the credibility of the source, reduces the validity of the assertion; and (d) a denial treatment, whereby pressure to respond favorably to the attack is reduced by the ostensible source's denial of any connection with the allegations contained in that message.

Specifically, Tannenbaum et al. (1966) described this denial strategy, subject of the present research, as "severing the cognitive link." They speculated that, since incongruity can only be generated when source and concept are brought into an evaluative relationship to one another, if the source and
concept might be dissociated in some manner, incongruity might be reduced.

In an effort to allow for comparison with McGuire's work in inoculation theory, three of his health truisms in turn served as the favorably evaluated concept: regular medical check-ups even in the absence of illness, use of X-rays for detection of tuberculosis, and frequent toothbrushing as a decay preventive practice. The United States Public Health Service (USPHS), which in pretesting was evaluated favorably by the undergraduate student subjects, was identified as the source of the attack messages. Adapted from those used in McGuire's 1961 experiment, the attacks argued specifically against the respective health practice.

Original messages were formulated to reflect each of the four strategies; denial was operationalized in the form of a USPHS press release denying any connection with statements recently attributed to the Service. Expressing neither agreement nor disagreement, the USPHS did, however, deny authorization of recommendations regarding the particular health practice contained in the message.

Beliefs were measured both before and after treatments using McGuire's 15-point scale. In addition to the control and attack-only conditions, treatments were used as both pre-attack (immunization) and post-attack (restoration) conditions. In the immunization sequence, subjects were first exposed to
the appropriate immunization message and one week later to the attack message. In the restoration sequence, the order of exposure was reversed. (Because the present research is concerned only with the effects of denial as a restorative agent, discussion of the remaining strategies is omitted.)

Analysis of the data revealed no support for the effectiveness of denial as either a restorative or an immunizing strategy. Both immunization (DA) and restoration (AD) condition means were nonsignificantly higher than those in the attack-only (A) condition; all were significantly lower than those in the control (0) group (0 = 11.77; DA = 9.06; AD = 9.96; A = 8.56).

The same researchers subsequently performed a similar study employing a somewhat different methodology. Only the X-ray topic was used, and the source, identified as a professor of medicine, not only denied connection with the attack but also expressed his strong support of the health practice. But the same results were obtained: The three experimental means were significantly lower than those of the control group and not significantly higher than those of the attack-only condition (A = 7.21; DA = 8.77; AD = 8.60; 0 = 12.52). Comparison across conditions revealed that while immunization was definitely superior to restoration for the other strategies tested, the trend, though not a significant one, was in the opposite direction for the denial treatment.
Not wishing to invalidate denial as a strategy for the reduction of persuasion, the experimenters conjectured that perhaps the denial messages had failed to produce their intended effect. Subsequently, Macaulay (1965) conducted a rather complex study of the various ways of producing resistance to persuasion, of which the denial strategy was one. Macaulay (under Tannebaum's guidance) reasoned that mere denial may only serve to weaken the cognitive link, leaving some doubt and also, therefore, some inconsistency. To more fully restore congruity, the favorable source must be actively in favor of the favorable concept, to be operationalized by his or her assertion of an opinion directly contrary to that of the main attack (Tannenbaum, 1967, p. 279).

Incorporating this principle into the methodology employed in the previous replication, Macaulay found both DA and AD conditions significantly different from the attack-only group ($p < .02$ and $p < .01$, respectively). That Macaulay operationalized denial with the added element of counter-assertion and that her subjects received this treatment immediately (as opposed to Tannenbaum's one-week delay) would seem to account for her positive results. The purpose of the present research is to examine in a single study the comparative immediate efficacy of the two types of denial and to determine what effect a two-day or a seven-day delay has upon them in terms of belief restoration following a successful persuasive attempt.
Taken together, the results of the aforementioned studies suggest the following predictions:

H1: The efficacy of either operational type of denial as a restorative agent will decrease as time between attack and denial increases.

This hypothesis is consistent with the findings of Pryor and Lander (Note 1) in their research on the restorative efficacy of refuational defenses. The present research attempts to ascertain if this time delay effect can be generalized to other defense types.

H2: Denial plus counter-assertion will be a more effective restorer of belief than will simple denial.

This hypothesis derives from a comparison of the results of Tannenbaum et al. (1966) with Macaulay (1965). This portion of the present research is undertaken in an attempt to validate these results in a single experimental setting utilizing consistent time intervals for treatment conditions.
METHOD

Design and Subjects

A methodology similar to Macaulay's but appropriately modified was employed. The same cultural truism—the use of annual chest X-rays for detecting tuberculosis—served as the belief topic. McGuire's attack message, as rewritten by Macaulay to resemble a news story, was used in accordance with the presentation of the experiment to subjects as a study of their reactions to science news in the mass media. This attack message remained intact with the exception of a minor change in the name of the ostensible source; rather than using "Dr. William J. McGuire," a name which today might have been familiar to some subjects, the name "Dr. J. R. Macaulay" was substituted. Where Macaulay used the "University of Wisconsin Mass Communications Research Center" in her cover sheet, the fictitious "Communication Research Institute" was used. This ambiguous but plausible cover was consistent with the mass media orientation which Macaulay gave her original study in hopes that the situation would appear to call for the subjects' judgment of the acceptability of the messages rather than as a test of the subjects themselves. The same name substitution of "Macaulay" for "McGuire" was made in Macaulay's original denial message
in which the alleged source of the attack not only denied any connection with the attack but also asserted an opinion directly contrary to that of the attack. This message was used in the denial plus counter-assertion conditions. For the simple denial conditions, the counter-assertion portion was simply deleted from the original message. Cover sheet and messages are reproduced in the appendices.

The same 21-item questionnaire which Macaulay used to measure beliefs was employed. This questionnaire contained statements which the subjects were asked to rate for agreement or disagreement on a 15-point scale divided into five areas of three steps each: definitely disagree, mildly agree, neutral, mildly agree, and definitely agree. This scale was devised by McGuire to result in a wide range of responses. The dependent variable of belief about the practice of annual chest X-rays was assessed by two different statements of the belief, buried among the remaining filler items in the questionnaire. Both McGuire and Tannenbaum et al. used these items in their research with this topic and found them initially highly endorsed by nearly all subjects (Macaulay, 1965, p. 31). One is a general belief statement on the value of annual chest X-rays as a public health measure and the other a statement of personal intention to have annual chest X-rays if facilities are available. (See items number 2 and number 16, respectively, of the questionnaire included in the appendices.) Because
this second item represents more of a commitment than a simple statement of belief, the two relevant items were scored and analyzed separately rather than combining them to obtain a single belief level mean as was done in the previous research.

As in the Pryor and Lander study (Note 1), resistance to persuasion was operationalized in two ways using the definitions formulated by Pryor and Steinfatt (1978). Complete resistance, or Type 1 resistance, occurs when the treatment produces a mean belief level which is significantly greater than the attack-only mean and not significantly lower than the initial control mean. Type 2 resistance occurs when the treatment produces a mean belief level that is significantly greater than the attack-only mean but significantly lower than the initial control mean.

A 3 (placement of denial in relation to attack) x 2 (type of denial) design was used to gather data on the two predictions. The three levels of denial placement included (a) immediately after the attack, (b) two days following the attack, and (c) seven days following the attack. This resulted in six cells of subjects, all of whom were students in the basic speech course at the University of Central Florida, Valencia Community College, or the University of South Florida. The data collection took place during regular class sessions; a total of 148 subjects participated.
Procedure

Six classes contributed data to the six experimental conditions. To control differences which might result from the different locales used, half of the subjects in each class provided data on the effects of simple denial and half on denial plus counter-assertion. In the case of delayed treatments, contamination due to possible subject interaction between sessions was not considered a problem. All subjects read the same attack message during the initial session; differing denial messages were not administered until the second and final session (either two or seven days later), during which questionnaires were completed immediately after subjects' reading of the denial.

The use of two control groups facilitated an after-only design. One class which did not receive the attack message but did complete the questionnaire provided data on subjects' initial belief level concerning the advisability of annual chest X-rays. In order to equalize time and effort across experimental and control groups, in lieu of the attack, subjects in this condition read a filler message (McGuire's supportive message for toothbrushing) immediately prior to completing the questionnaire. Another class read only the attack message, whereupon its members immediately completed the questionnaire. This attack-only group provided data on the effectiveness of the attack in reducing initial belief level.
Subjects in the two control groups and in the two immediate treatment groups received complete booklets containing the cover sheet, appropriate message(s), and the questionnaire. To more equally distribute time spent on each section, a statement was included at the bottom of the last page of each division instructing subjects not to turn the page until asked to do so. Subjects were given five minutes to read the attack message (or supportive toothbrushing message in the attack-only condition), two minutes to read the denial (omitted in the control conditions), and five minutes to complete the questionnaire. In the four delayed-treatment conditions, subjects were given only the cover sheet and attack message to read in the first session. Since the cover sheet described a study calling for individual reactions to materials read, the experimenter explained that the study was originally planned for completion in one session, but "in order not to take up too much of any one class period," the study would be completed at "the next opportunity." When the experimenter returned to the class either two or seven days later, only those students who had participated in the first session were asked to participate in the second. Upon completion of questionnaires and retrieval of booklets in all conditions, the experimenter debriefed the subjects, taking special care to point out that allegations made in the support and attack messages were contrived for the purposes of the research project.
and should in no way be accepted as facts concerning the prevention or treatment of disease.
RESULTS

Data analysis was completed in four stages. The results of question 2, a general belief statement on the advisability of annual chest X-rays for the detection of tuberculosis, were of primary consideration. Using this question alone, results of the control groups and the experimental groups receiving the simple denial treatment were compared with those of the control and the denial plus counter-assertion group results. Data for question 16, representing a commitment on the subjects' part to undergo annual chest X-rays, were analyzed in the same fashion. However, because commitment falls somewhat beyond the scope of the present research, these results assumed a secondary role in the analysis.

An examination of question 2 responses reveals that the mean initial belief level of 8.65 falls just short of mild agreement but is nonetheless above the midpoint of the 15-point scale. The attack-only mean of 3.08 represents a significant reduction in initial belief level (p<.01, Newman Keuls).

The effect of delay upon simple denial as a restorative agent was tested with a one-way analysis of variance across the three experimental and two control treatments (F(4,92) = 6.31,
A Newman-Keuls analysis was used to contrast all pairs of means. Table 1 summarizes the analysis.

Table 1
Newman-Keuls Matrix for Simple Denial

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Attack-only</th>
<th>2-day</th>
<th>7-day</th>
<th>Immed</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>3.08</td>
<td>4.69</td>
<td>5.50</td>
<td>6.75</td>
</tr>
<tr>
<td>Attack-only</td>
<td>--</td>
<td>1.61</td>
<td>2.42</td>
<td>3.67*</td>
<td>5.57**</td>
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<tr>
<td>2-day</td>
<td>4.69</td>
<td>--</td>
<td>.81</td>
<td>2.06</td>
<td>3.96*</td>
</tr>
<tr>
<td>7-day</td>
<td>5.50</td>
<td>--</td>
<td>--</td>
<td>1.25</td>
<td>3.15*</td>
</tr>
<tr>
<td>Immed</td>
<td>6.75</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1.90</td>
</tr>
<tr>
<td>Control</td>
<td>8.65</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*p < .05; critical value for 4 rows = 3.46; 3 rows = 3.14
**p < .01; critical value for 5 rows = 4.43

The Newman-Keuls results show that the two-day and seven-day delayed treatments failed to produce either Type 1 or Type 2 resistance. The respective means are significantly below the initial control mean and do not significantly exceed the attack-only mean. However, the immediate treatment produced Type 1 resistance, with a mean score which differs significantly from the attack-only and not from the initial belief mean score. The fact that the immediate treatment produced resistance while the delayed treatments did not would appear to support Hypothesis 1. But because there were no significant differences among the three treatment means, it cannot be stated conclusively
from these results that the efficacy of simple denial decreases as time between attack and denial increases.

The one-way analysis of variance testing the two control and the three experimental groups using the denial plus counter-assertion treatment demonstrated that differences exist ($F(4,94) = 7.12, p < .01$). The Newman-Keuls analysis is summarized in Table 2.

Table 2
Newman-Keuls Matrix for Denial Plus Counter-Assertion

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Attack-only</th>
<th>Immed</th>
<th>7-day</th>
<th>2-day</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>3.08</td>
<td>5.50</td>
<td>5.74</td>
<td>6.79</td>
</tr>
<tr>
<td>Attack-only</td>
<td>3.08</td>
<td>--</td>
<td>2.42</td>
<td>2.66</td>
<td>3.71</td>
</tr>
<tr>
<td>Immed</td>
<td>5.50</td>
<td>--</td>
<td>--</td>
<td>.24</td>
<td>1.29</td>
</tr>
<tr>
<td>7-day</td>
<td>5.74</td>
<td>--</td>
<td>--</td>
<td>1.05</td>
<td>2.91*</td>
</tr>
<tr>
<td>2-day</td>
<td>6.79</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1.86</td>
</tr>
<tr>
<td>Control</td>
<td>8.65</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*p < .05; critical value for 3 rows = 2.89

**p < .01; critical value for 5 rows = 4.77

These results show that all three denial plus counter-assertion treatments failed to produce resistance. However, the two-day delayed treatment produced a mean belief score which did not differ significantly from the initial belief mean and fell just short of the .05 significance level for differences between it and the attack-only mean. Once again, because there were no significant differences among the three treatment means, Hypothesis 1 was not supported.
A one-way analysis of variance across the six experimental treatments indicated that significant differences among simple denial and denial plus counter-assertion conditions do not exist. Therefore, Hypothesis 2 received no support: Denial plus counter-assertion was not found to be a more effective restorer of belief than simple denial.

 Examination of question 16 responses reveals a mean initial belief level of 6.17, which is well below the midpoint of the 15-point scale. The attack-only mean of 2.00 represents a significant reduction in initial belief level \((p<.01, \text{Newman-Keuls})\) and the only significant difference between means uncovered by the Newman-Keuls analysis for either simple denial or denial plus counter-assertion conditions.

 As previously mentioned, question 16 called for a commitment on the subjects' part to undergo annual chest X-rays. Because both Tannenbaum and Macaulay used this item along with question 2 in the compilation of their data, analyses for this item were made in the present research but were excluded from the presentation of the overall results. Since the initial mean belief level represents, in fact, a disbelief, and because a subject's intention to act on a belief does not necessarily relate directly to his or her stated belief, the failure of both types of denial to produce resistance regardless of placement was seen to have no direct bearing on either of the two predictions.
DISCUSSION

As Miller and Burgoon (1973) have pointed out, we are living in an age where we are bombarded daily by a barrage of persuasive attacks. While it is certainly important that we as communicators understand (or are capable of employing) the myriad of offensive plans, it would seem equally as important that we learn to deal with defensive ones as well. And, while the majority of the research treats persuasion almost exclusively as a facilitator of change in attitudes and behaviors, "much persuasive communication seeks to reinforce currently held convictions and to make them more resistant to change. . . . The value of persuasion as an inhibitor of change is undeniable" (Miller & Burgoon, 1973, pp. 5-6).

Such concern for the vulnerability of people's convictions gave rise to the less often emphasized body of research dealing with resistance theory; a direct corollary of this research is the concept of restoring beliefs which have undergone successful persuasive attacks. If a person, living in an ideologically monolithic environment, unprepared to defend his or her beliefs, succumbs to a persuasive attack, how may we as communicators endeavor to restore the affected belief? Further, if a person's belief is successfully attacked by a respected source, will
breaking the link between this source and the attack (denial) facilitate restoration? And, specifically, what happens as the time between attack and denial increases?

Research into these questions has various implications: for the businessman wishing to counteract a competitor's negative claim; for the defense lawyer hoping to outweigh the prosecutor's final arguments; for the politician attempting to dissociate himself from purported wrongdoings; for a country endeavoring to overcome the effects of another's propaganda.

While some attention has been given to the problem of belief restoration and particularly to the comparative effects of restoration versus immunization, few experiments have dealt with denial. Tannenbaum et al. (1966) were the first to operationalize denial as a strategy for the reduction of the incongruity generated when a favorably evaluated source makes a negative assertion against a favorably evaluated concept. Tannenbaum et al. defined denial as a statement whereby the ostensible source denies any connection with the attack—what the present research labels "simple" denial.

The findings of the present study confirm the results of Tannenbaum et al. (1966) in their test of simple denial as a restorative agent when administered to subjects one week after their receipt of the attack. Neither simple denial nor denial plus counter-assertion produced resistance at this stage of treatment. Evidence was found, however, to support the case
for simple denial when administered immediately after the attack. That denial plus counter-assertion did not produce resistance in the immediate treatment condition failed to confirm the results of Macaulay's 1965 experiment. This, combined with the lack of significant differences among the six treatment means, failed to support the predicted superiority of denial plus counter-assertion over simple denial as a restorer of belief.

While subjects' initial belief level fell within the neutral range (8.65), the attack was massively effective (3.08); according to the Pryor and Lander (Note 1) rationale, the subjects' belief became a disbelief. And while simple denial served in the immediate condition to reduce the incongruity generated by the attack (though not significantly better than any other treatment), the added element of counter-assertion in all likelihood was viewed by the subjects as belief-discrepant, given the extent to which their initial belief level had been lowered. If belief restoration is analogous to medical resuscitation in the sense that Pryor and Lander have described, then the severity of the attack in the present research may have been such as to make restoration of any type virtually impossible.

The lack of significant differences between the immediate and two-day treatments and between the two-day and seven-day treatments for both denial types invalidates the hypothesized
delay effect. That the results of the denial plus counter-assertion two-day delayed treatment approached significant Type 1 resistance suggests further inquiry be made into the effects of time upon this and other restorative strategies.

In pursuing this line of research, the object of the restoration, or the belief itself, assumes an important role. In the present research, the use of annual chest X-rays in the detection of tuberculosis served as the belief object, for this was the health truism common to several pertinent studies: McGuire and Papageorgis (1961), Tannenbaum et al. (1966), Macaulay (1965), and Pryor and Lander (Note 1). But in the 20 years since McGuire and Papageorgis first introduced the idea of cultural truisms to the field of resistance research, the potential harmful effects of radiation and, in particular, of the routine use of X-rays in the diagnosis of disease have received widespread publicity. An examination of mean initial belief levels in the three experiments which examined singularly the X-ray issue reveals a steady decline. McGuire and Papageorgis (1961) calculated subjects' initial agreement with the use of annual chest X-rays in the detection of tuberculosis as 13.02 on a scale of 1 to 15 where 15 represents definite agreement. Macaulay (1965) reported a 12.52 initial belief mean, and Pryor and Lander (Note 1) a 10.32. The present research reveals that subjects' agreement with this belief item has fallen even lower to 8.65, a rating which falls within the neutral range just
short of mild agreement. It would appear that the X-ray topic may no longer be labeled a "truism" and is instead a belief on the wane. An even lower initial belief mean in the present research for the questionnaire item involving subject commitment lends support to this theory.

Yet while the possible failure of the X-ray topic to conform to the "standards" for health truisms may limit generalization of the present findings on denial in terms of other cultural beliefs, the possibility exists for parallels to be drawn in regard to other more controversial beliefs. Consider for instance the Watergate-era politicians who issued denials of wrongdoings in an attempt to restore their waning credibility. Further examination of the efficacy of denial as a restorative strategy involving beliefs of a more controversial nature should prove especially interesting to researchers with applied interests.
APPENDICES
Appendix A: Cover Sheet for Messages

COMMUNICATION RESEARCH INSTITUTE

The present study is being conducted by the Communication Research Institute as part of a larger investigation dealing with the public communication of health information—about problems and personalities in the various health sciences. We have selected several such communications which recently appeared in the various public information channels to present to you—different messages for different individuals. We shall want your reactions to some of these materials after they are read, and again we ask you to give your honest responses—your own evaluations and not necessarily what you think people in general feel. Therefore, please read the materials and give your judgments with serious thought. Since the nature of the materials differ somewhat, some of you may finish before others. If so, please wait quietly until everyone is done.
Appendix B: Belief Attack Message

A Columbia University medical school professor has raised serious questions about the wisdom of X-ray examinations once a year for detecting tuberculosis (TB). Dr. J. R. Macaulay, in an article published this week, states that this conclusion stems from the fact that exposure to radiation—even in the small amounts encountered in the X-ray examination—is recognized as a real and present danger to health.

For one thing, he states, such radiation can produce bone cancer as well as leukemia (cancer of the blood). The radiation produced by X-rays is also extremely damaging to the reproductive tissue, resulting in either sterility or defective children. Furthermore, TB is so rare today in the general population that such "shotgun" techniques as universal chest X-rays are wasteful of needed manpower and financial resources. Not least, the chest X-ray is now outmoded by newer and safer methods of TB diagnosis. Discussing each of these dangers, the article states:

"Perhaps the most serious hazard involved in X-ray diagnosis is the possibility that repeated exposure to this type of radiation will produce cancer. In recent years there has been an alarming increase in the incidence of bone cancers, leukemia, and related malignant diseases. Studies on the effects of
atomic fallout have shown that this alarming increase can be traced, at least in part, to the nuclear bomb tests. Exposure to any kind of radiation--gamma rays, X-rays, etc.--allows powerful invisible particles to penetrate to the vulnerable tissues deep within our bodies, damaging these tissues and, when strong enough, producing malignancies (cancer)."

In a recent study, according to Dr. Macaulay, monkeys were exposed to regular low-level X-ray radiation. After ten such treatments it was found that 85% of these animals developed cancer at the region of exposure. In humans such cumulative radiation is particularly likely to produce bone cancer and leukemia. Because of this grave danger, it is essential that we keep X-ray dosage at a minimum and not undergo X-ray examination for TB (or any other disease) routinely each year. Rather, exposure to these dangerous radiations should be confined to the rare occasion when there is some positive reason for suspecting the disease.

Another danger involved in X-ray examinations is that radiation is particularly damaging to the reproductive tissue. Hence, X-rays can cause sterility, or, if they do not produce complete sterility, there is a highly undesirable possibility that the damage to the reproductive tissue will produce radical changes in the chromosomes and genes of the germ cells, thus causing mutations. Children born of such damaged germ cells tend to have serious, often fatal defects.
"Probably the major cause of the current rise in the number of defective births is the increased amount of radiation to which we are now being exposed," the article states. "These mutations may develop slowly and progressively and go undetected for generations. For our own good, and for the sake of generations yet unborn, we should keep our exposure to radiation at a minimum, and have X-rays only on individual medical advice."

Not only are there good medical reasons against X-rays for detecting TB, but there are good practical and financial reasons as well. The wholesale campaigns in the United States to detect TB through X-rays only waste manpower and money in a country where the incidence of TB is very low. TB has become a relatively rare disease in this country. Today, TB occurs with any frequency only among underprivileged groups with an inadequate diet. The resources now devoted to expensive campaigns to give annual X-ray exams to all Americans could be better spent for underprivileged groups, thus making a concentrated attack on TB where it makes the greatest inroads.

In view of these reasons, it is obvious that several new tests for TB, the best of which is the skin test, should be used rather than X-rays. The skin test is a simple, safe and inexpensive substitute for the X-ray examination, and is now relied upon almost exclusively by many of the foremost centers for TB diagnosis. "In fact," the article states, "not only is the skin test safer and cheaper than the chest X-ray, but
it is also a surer means of detecting TB. The reading of chest X-ray plates requires highly trained physicians, and still involves an element of subjective judgment. The skin test virtually eliminates the possibility of error in the detection of TB. These reasons make it obvious why the routine use of chest X-rays to detect TB should be discarded."
Appendix C: Simple Denial

Dr. J. R. Macaulay, professor of medicine at Columbia University, today strongly denied any connection with recent statements questioning the wisdom of annual X-ray examination for the detection of tuberculosis. Such statements were contained in a recently published article which was attributed to Dr. Macaulay.

"I have never made such statements," said Dr. Macaulay, "and I have no idea why my name was used on the article. I had no knowledge of this article until it was called to my attention by medical colleagues."
Appendix D: Denial Plus Counter-Assertion

Dr. J. R. Macaulay, professor of medicine at Columbia University, today strongly denied any connection with recent statements questioning the wisdom of annual X-ray examination for the detection of tuberculosis. Such statements were contained in a recently published article which was attributed to Dr. Macaulay.

"I have never made such statements," said Dr. Macaulay, "and I have no idea why my name was used on the article. I had no knowledge of this article until it was called to my attention by medical colleagues. As is well known, my position on the use of X-rays for detection of tuberculosis is quite the opposite of the views expressed in this article. I have been--and still am--a strong advocate of annual X-ray examination."

According to Dr. Macaulay we are now "in a position finally to control and eradicate TB. The major weapon in this successful fight has been the widespread adoption of the practice of getting an annual chest X-ray. The continued use of chest X-ray examinations is the surest way to prevent TB from ever again becoming the killer it once was."
Appendix E: Questionnaire Instructions

Please judge the statements on the following pages in terms of your own present feelings—your agreement or disagreement at this time.

The form of the questionnaire is as follows:

At the present time in the U.S., life expectancy is greater for people living in rural areas than for those in urban areas.

: : : / / / / / / : : :

definitely mildly neutral mildly definitely
disagree disagree agree agree

Notice that the scale has five main categories (definitely disagree, mildly disagree, etc.) and that each of these categories has three divisions—that is, 15 rating positions in all. You indicate the degree of your agreement with the statement by marking an "X" in whichever of these 15 divisions best shows your opinion about the statement.

Please read the statements carefully, so you are sure you are indicating your own opinion at this time.

Remember, do not omit any items.
Appendix F: Questionnaire

SURVEY QUESTIONNAIRE

1. Everyone should see his doctor at least once a year for a complete medical examination.
   __ __ __ __ __ __
   definitely mildly neutral mildly definitely
   disagree disagree agree agree

2. Getting an annual chest X-ray in order to detect symptoms of tuberculosis at an early stage is a wise public health practice.
   __ __ __ __ __ __
   definitely mildly neutral mildly definitely
   disagree disagree agree agree

3. The U.S. Public Health Service serves the public interest and welfare in a reliable and efficient manner.
   __ __ __ __ __ __
   definitely mildly neutral mildly definitely
   disagree disagree agree agree

4. The benefits to mankind from using penicillin have far outweighed any disadvantages.
   __ __ __ __ __ __
   definitely mildly neutral mildly definitely
   disagree disagree agree agree

5. Everyone should brush his teeth after every meal if at all possible.
   __ __ __ __ __ __
   definitely mildly neutral mildly definitely
   disagree disagree agree agree
6. Dr. J. R. Macaulay, member of the Columbia University medical faculty, is a reliable source of information on public health topics.

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7. As a rule, it is not a good idea to use X-rays for diagnostic purposes unless other diagnostic tools have failed to find the cause of an illness.

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8. The American Medical Association is a worthwhile professional organization.

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9. Possibly the greatest single advance in the history of medical science was the discovery of penicillin.

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10. It is important to get a complete physical check-up once every year in order to prevent the possibility that minor physical ailments will develop into major illnesses.

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11. The use of pesticides to control insect pests has many more beneficial than harmful consequences.

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12. Dr. J. R. Macaulay, professor of medicine at Columbia University, is a fair and just individual.

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13. There are safer and more reliable ways of detecting TB than X-ray examination.

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14. The best way to prevent tooth decay is to brush one's teeth frequently.

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15. Dr. James E. Gunther, research professor at the University of California, is an authoritative source of information on health topics.

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16. If chest X-ray facilities were easily accessible to me, I would definitely have an annual X-ray for detection of TB symptoms.

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17. The use of natural predators is a safer and more efficient way to control insect pests than the use of chemical pesticides.

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18. As a government agency, the U.S. Public Health Service is professionally competent and relatively free from political influences.

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19. Hypochondria (imaginary illness) is a major public health problem.

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20. The present volume of chemical pesticides being used in agriculture constitutes a clear danger to the public welfare.

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21. The American Medical Association is a reliable source of information about medical research.

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