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#### ABSTRACT

# ARGUMENTATIVE MESSAGE STRUCTURE AND PRIOR FAMILIARITY AS PREDICTORS OF SOURCE CREDIBILITY AND ATTITUDE CHANGE

By

#### John R. Weston

Persuasive messages that also take into account arguments which oppose the source's position have been shown to be generally more effective than messages that present only arguments consistent with the source's position when receivers are initially opposed to the source's position and familiar with the message topic. This study investigated the relationship between a receiver's specific familiarity with arguments that oppose a communicator's position and the extent to which such arguments are taken into account in the message.

Two dimensions of persuasive messages were studied. A message (1) presented only arguments which were consistent with the advocated position (constructive argumentative structure) or also presented arguments antagonistic to the advocated position (rebuttal argumentative structure) on (2) fewer, the same, or more topic-related issues than those with which the subject was familiar prior to being exposed to the message.

From previous research and theoretical considerations it was hypothesized that attitude change is directly related to the number of topic-related issues presented in the message. It was also predicted that

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rebuttal argumentative structure elicits more attitude change than constructive structure, provided none of the antagonistic arguments in the rebuttal message were previously unfamiliar to the receiver. Similar predictions were made about the source credibility induced by the various message types. The differentially induced credibility was advanced as a major determinant of the predicted differences in attitude change between the messages. Thus, it was logically consistent to also hypothesize that the removal of the effects of credibility from attitude change would significantly reduce the attitude change differences elicited by the various messages, when credibility was not controlled.

It was further reasoned that including unfamiliar antagonistic arguments in a rebuttal message strengthens rather than weakens the position the receiver held prior to the communication. Thus, it was hypothesized that a rebuttal argument that takes into account all familiar antagonistic arguments is more persuasive than a rebuttal argument that also takes into account previously unfamiliar arguments. When the effects of source credibility are statistically removed from attitude change, an increase in the difference in attitude change was hypothesized.

240 college undergraduates took part in two experimental sessions. Subjects were familiarized with arguments at time-one that would be antagonistic to the position advanced at time-two. The first session also successfully instilled an attitude toward the experimental topic that opposed the evaluation advocated in time-two experimental message.

One week later messages were presented which varied on the two dimensions (i.e., on argumentative structure and relative issue familiarity).

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After the message presentations, at both sessions, attitude toward the topic was determined by summing across masked versions of the same five evaluative semantic differential scales. Attitude toward the message source (time-two) was determined by source ratings on semantic differential scales measuring perceived safety and qualification. The data were analysed by analysis of variance, individual t-test comparisons, and zero-order as well as part correlation techniques.

The hypotheses relating attitude change to argumentative structure were supported. The prediction that also including unfamiliar antagonistic arguments in a rebuttal message would reduce the attitude change elicited was also supported. The prediction that also including unfamiliar issues in a constructive argument would be more persuasive than including only familiar arguments was not supported.

None of the hypothesized effects of the message treatments on source credibility were supported. Neither did removing the effects of source credibility from attitude change alter any of the message effects on attitude change.

Previous research has led to the conclusion that the "two-sided" message is more persuasive than the "one-sided" when the receiver initially disagrees with the communicator's position. The results of this study suggest that this traditional proposition should be modified by stipulating that the "two-sided" message not include opposing arguments with which the receiver is not already familiar. ARGUMENTATIVE MESSAGE STRUCTURE AND PRIOR FAMILLARITY AS PREDICTORS OF SOURCE CREDIBILITY AND ATTITUDE CHANGE

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### CHAPTER I

## INTRODUCTION

One of the earliest message variables to be studied as a potentially useful predictor of influence acceptance was "message sidedness". These early studies were derived more from the intuitive belief that communication "sidedness" was a relevant factor than from any well developed theoretic considerations. The studies compared the relative persuasiveness of messages which contained only arguments and information favoring the communicator's point of view with messages which also considered an alternative point of view.

The initial investigation of the relative effectiveness of "one-sided" versus "two-sided" communication was conducted during World War II (Hovland, Lumsdaine & Sheffield, 1949). These investigators found no overall difference in the persuasive influence of the two types of communication; however, when both education and initial position were considered, the communication giving both sides proved to be more effective among the better educated, regardless of initial position. The "one-sided" presentation was primarily effective for the less well educated when they were already favorable to the advocated position.

Since this original study, a number of researchers have investigated the persuasive effectiveness of the two types of messages (e.g., Lumsdaine & Janis, 1953; Paulson, 1954; Wolfinger, 1955; Thistlethwaite & Kamenetzky, 1955; Thistlethwaite, Kamenetzky & Schmidt, 1956; Crane, 1962; Insko, 1962; Chu, 1966). The findings of some of these studies will be discussed in subsequent sections. For the present, it is sufficient to note that, in general, the findings are inconclusive and often contradictory. Sometimes the "one-sided" message is more persuasive; sometimes the "two-sided" message is more persuasive; sometimes there is no difference.

The one-sided/two-sided issue, however, continues to be of research interest, not because the findings are consistent, but because fairly consistently there are findings. This suggests that message "sidedness" might be operating in conjunction with other factors in the communication situation which have not been controlled or in some other way accounted for in the research design.

Any investigation of such a conjunctive relationship presumes that the sidedness concept has been explicated. Unfortunately, very little attempt has been made to explicate the concept. Typically, the variable simply has been dichotomized into "one-sided" and "two-sided". A message has been called one-sided if it presents arguments for a given point of view without considering arguments for the opposing point of view. A message that also presents arguments for the opposing point of view has been called two-sided. Thus, one can conclude only that the two-sided message contains an indeterminate amount of unspecified content which is antagonistic to the source's point of view, and that the one-sided message does not. Considering the conceptual and operational freedom permitted by such vague terminology, it is not surprising that the research which has used these labels has produced confusing findings.

Failure to conceptualize the variable has precluded the development of an adequate theoretic rationale and limited the predictive usefulness of the "sidedness" notion. Hovland and his associates, in advancing a rationale for the two-sided message, originally suggested that presenting arguments on both sides can be defended on the grounds of "fairness" or, the right of an individual to have access to all relevant information in making up his mind (Hovland, Lumsdaine, and Sheffield, 1949). The two-sided message, they suggest, would likely be viewed as less biased than the one-sided and hence would be more persuasive.

Later researchers seem to have accepted this interpretation with little refinement. Insko, for example, in predicting that the two-sided message would be more effective than the one-sided, refers to "the common sense grounds of the presumably more impressive impact of the two-sided communication " (1962, p. 203)

Yet, the research evidence does not provide unqualified support for this presumption. Several studies have shown that the increased effectiveness is often related to two states of the receiver prior to the presentation of the message-<u>evaluative predisposition</u> or prior attitude, and <u>issue familiarity</u> or the receiver's information level on the issue.

#### Prior Attitude

The studies that have considered <u>evaluative predisposition</u> of the issue and the relative effectiveness of one-sided and two-sided messages have demonstrated that for individuals initially in agreement with the advocated position, including antagonistic arguments in the

message decreases persuasive effectiveness (Hovland, Lumsdaine & Janis, 1949; McGuire, 1962; McGuire & Papageorgis, 1961). One interpretation of this finding is fairly obvious. When an individual is already in agreement with the advocated position, including antagonistic arguments raises doubts and thereby reduces the persuasiveness of the message relative to the same message with the antagonistic arguments omitted.

## Issue Familiarity

Laboratory experiments also repeatedly have demonstrated that the subject's familiarity with an issue reduces the persuasive effectiveness of any message attempting to change the subject's evaluations (e.g., Coffin, 1941; McGuire & Papageorgis, 1961; Crane, 1962; Manis & Blake, 1963; McGuire, 1962). Insko (1962) investigated the effect of prior familiarity on the persuasiveness of one-sided and two-sided messages. He found that familiarity reduced the effectiveness of both types of messages but that the reduction was greater for the one-sided message.

In summary, these studies have demonstrated that antagonistic arguments in the message increase persuasiveness when the receiver (1) is initially opposed to the communicator's position, or (2) is already familiar with antagonistic arguments. These two findings are quite separate in the literature. No studies have simultaneously determined or varied both prior attitude and prior familiarity in investigating the relative efficacy of the one-sided and two-sided message.

The development of a rationale that would encompass both sets of findings begins with the question, "Why should including antagonistic arguments increase the persuasiveness of a message?" Such arguments

oppose the communicator's position and should, in and of themselves, represent a negative vector, i.e., a pull away from the position advocated by the communicator. The research findings, however, suggest that the sign of the vector is not necessarily negative but is dependent upon at least two factors external to the message--the receiver's prior attitude and prior familiarity.

To this point, the discussion has focussed on the effect of antagonistic arguments in the message and on prior attitude and information level of receivers. Considerable research has indicated that a third type of variable, the evaluation of the source, also affects persuasion. If it can be argued that inclusion of antagonistic arguments affects source evaluations, and that these changes in evaluation then affect persuasiveness, then it would follow that source evaluation must be considered as an explanatory variable operating in conjunction with the inclusion of antagonistic arguments. The Effect of Message Variables on Source Evaluation

While it has not been empirically demonstrated that variations in antagonistic message content affect source evaluation, a number of researchers have shown that a diversity of other message variables do affect source evaluation. These variables include the source's <u>verbal fluency</u> (Miller & Hewgill, 1964), <u>interphrase rate</u> and <u>pause</u> <u>time</u> (Leitner, 1962), <u>word familiarity</u> (Carlson, 1960), and the use of <u>socially acceptable language</u> (Harms, 1960). Other writers have demonstrated that source evaluations may also be affected by such factors as the perceived <u>manipulative intent</u> of the message (Walster & Festinger, 1962), the perceived objectivity of the source as determined from the

message (Hovland & Mandell, 1952), or whether the message is <u>argumen-</u> tative or conciliatory (Ludlem, 1956).

This sample of research does indicate that several message attributes affect source evaluations; however, attempts to relate these message induced differences in source evaluation to accompanying differences in influence acceptance have met with little success. On the other hand, the presence or absence of antagonistic arguments in a message is a message variable which has been shown to be related to influence acceptance but the effects of this variable upon source evaluation have not been empirically investigated.

The importance of such an investigation is underlined by the weight of evidence indicating that source evaluation has considerable effect on influence acceptance.

Source Evaluation and Influence Acceptance

The differential effectiveness of various kinds of message sources on influence acceptance has been repeatedly demonstrated in laboratory situations. These investigations have been conducted under a variety of descriptive labels used to denote the varying effectiveness of source attributes on influence acceptance. <u>Prestige</u>, <u>status</u>, <u>charisma</u>, <u>image</u>, <u>reputation</u> and <u>source credibility</u> are among those labels employed. This research has shown rather consistently that sources who are favorably evaluated on a variety of attributes are more effective in their persuasive attempts than those less favorably evaluated provided the source differences are sufficiently extreme (e.g., Haiman, 1949; Mausner, 1953; Hovland & Weiss, 1951; Kelman, 1953; Kerrick, 1958; Hollander, 1961).

Over the past four decades, changes in emphasis have occurred in the literature on source evaluation and communication effectiveness. In their review of the area, Clevenger and Anderson (1963) have detailed the transition from viewing credibility as a characteristic which can be intuitively determined on an <u>a priori</u> basis to the view that the characteristics of sources which form the basis of source effectiveness are determined by the perceptions of the receiver.

Mertz (1966) has extended the Clevenger and Anderson analysis by tracing the accompanying developments in conceptualizing and measuring the variable. He points out that while earlier theorists disagreed as to the specific antecedents of source effectiveness in attaining influence acceptance, they were unanimous in their treatment of credibility as a unidimensional attribute---usually measured by a single linear rating scale. The source attributes thus scaled included <u>likableness</u> (Saadi & Farnsworth, 1934), <u>trustworthiness</u> (Hovland & Weiss, 1951), and <u>prestige</u> (Adams, 1960). Other researchers obtained source ratings on the <u>evaluative dimension</u> proposed by Osgood, Suci & Tannenbaum, (1957) by summing over a number of semantic differential scales which loaded on that dimension (e.g., Wolfinger, 1955; Berlo & Kumata, 1957).

Since each of these perceived attributes was shown to be related to source effectiveness, it became clear that the basis of relevant source evaluation could be more usefully viewed as multidimensional. Within recent years, attempts have been made to specify the underlying dimensions of source evaluation relevant to influence acceptance and to provide reliable instruments for measuring these dimensions. The

investigations of a number of researchers employing factor analytic techniques yielded quite similar dimensions (Anderson, 1961; Berlo & Lemert, 1961; Berlo, Lemert & Mertz, 1965; Schweitzer, 1966; McCroskey, 1966). The findings suggest that there are three relatively independent dimensions upon which sources are evaluated: "qualification" or perceived general ability, intelligence and expertise, "safety" or predictability, honesty and perceived manipulative intent, and "dynamism" or perceived energy and vitality. These studies repeatedly demonstrated that the three dimensions (particularly "safety" and "qualification") account for a large amount of the variability in source evaluation. Typically, "safety" accounted for about one-half of the common variance, "qualification" somewhat less and "dynamism" about one-tenth of the common variance.

These studies provide an operational definition for source credibility which can be used to investigate the interdependence of source credibility and message variables on communication effectiveness. Pre-Message Credibility

Much of the previous research on communicator credibility has investigated only the effect of varying source preconceptions on influence acceptance. The typical procedure has been to attribute the message to one of a number of sources about whom subjects are capable of making evaluations prior to the presentation of the message. Either sources are well known public figures or evaluatively relevant information about the sources is provided prior to the communication itself. Any observed difference in influence acceptance is then reasonably attributable to the differential source evaluations. However, in many

persuasive communication situations, there is no strong prior source evaluation and, in some cases, the source is unknown. In these situations, most or all of the cues on which the subject bases his credibility evaluations are limited to variables in the source's message.

A research emphasis which is limited to the differential effectiveness of sources about which credibility evaluations are fairly well stabilized poses the rather narrow question as to the tempering effect of credibility on the subsequent message. Neglected is the related question of the effect of message variables on source credibility. Furthermore, considering these questions only one at a time precludes an investigation of the possible interdependence of the two factors and their conjunctive effect on influence acceptance. Antagonistic Arguments, Source Credibility, and Influence

This section develops a rationale for the predicting of the effect of antagonistic arguments on source credibility which in turn serves a mediating function in the influence process. The rationale is derived from the theoretical considerations and research evidence which have been discussed earlier and which indicate that (1) source credibility has an effect on influence acceptance, (2) that message variables are capable of affecting source credibility, and (3) that messages which include antagonistic arguments are more persuasive than messages which do not include such arguments, when the receiver is initially opposed to the source's position or is already familiar with the antagonistic arguments. In the following discussion, it is assumed that the receiver initially is not in agreement with the position advocated by the source. While the communication situation in

which the receiver is initially in agreement is of theoretic interest, it is outside the scope of this study.

When the receiver is initially opposed to the source's position it is likely that he will be aware of arguments upon which his own position is based. At least, he will be aware that the source's position is not the only one available. In this type of situation, failure on the part of the source to acknowledge these opposing arguments is likely to result in his being evaluated low on the "safety" and/or "qualification" dimensions of credibility. For initially opposed individuals, credibility (differentially induced by messages which include or do not include antagonistic arguments) is advanced as a mediating factor in the influence process.

Similarly, when an individual is familiar with arguments which are antagonistic to the source's position, failure to include such arguments in the message should result in the source being perceived as low in "safety" and "qualification". By including those arguments which are already familiar, the source is likely to be evaluated as fair or unbiased and knowledgeable. Although the antagonistic arguments, in and of themselves, represent a negative vector, at the same time, these arguments should increase the credibility of the source. This is a positive vector. Since the antagonistic arguments are already familiar, their vector strength (information value) should be low relative to the vector strength of the induced credibility. Thus, the resultant of the two vectors should then be positive. This is advanced as an explanation for the greater persuasiveness of the message which includes familiar antagonistic arguments as opposed to the message

which does not include such arguments.

However, it is obvious that categorizing persuasive messages merely as "including" or "not including" antagonistic messages is an oversimplification of actual situations. The message may include varying amounts of antagonistic arguments familiar to the individual receiver, e.g., the receiver may be familiar with opposing arguments not presented in the message, or the message may include all such arguments. Furthermore, the message may include unfamiliar antagonistic arguments.

It can be argued that the persuasive consequence of including unfamiliar antagonistic arguments is quite different from that of including arguments which already are familiar. While the latter was suggested to have low information value, unfamiliar antagonistic arguments should have high information value, and should strengthen rather than weaken the position the receiver held originally. Any advantage to the communicator in terms of a credibility increment should be more than offset by the high information value of the unfamiliar arguments antagonistic to the source's position.

The relationship between an individual's familiarity with arguments that oppose the source's position and the extent to which a persuasive message takes these antagonistic arguments into account is advanced in this study as a major determinant of the influence that the message will have. Specifically, familiar antagonistic arguments have low information value and when presented in a message, increase influence acceptance because of the increased credibility which accrues. In comparison, unfamiliar antagonistic arguments have high information value which opposes the advocated position and any

increase in credibility that might be associated with including such arguments does not offset their negative affect on influence.

# Hypotheses

Presentation of the hypotheses requires prior explication of the nature of the variables included in the experiment. The hypotheses require that two variables be taken into account prior to the experimental manipulations. The first is the subject's prior evaluation of the message topic. From the rationale, it is apparent that these prior evaluations affect influence acceptance. That variable will be removed from the hypotheses by inducing a prior position for all subjects which is antagonistic to the position that will be advocated by the source.

The second control variable is the prior information of the subject. That variable will be controlled by inducing a common level of prior information among subjects; namely, each subject will be provided one argument on each of two issues relevant to the message topic. These arguments will also be antagonistic to the position advocated by the source.

Within this frame, there are two major independent variables. The first is the nature of the argumentative structure of the message. This variable has two values: (1) the message includes only arguments which support the source's position, and (2) the message "takes into account" arguments which oppose the source's position in presenting the arguments which support the source's position. These values are referred to as (1) constructive message structure and (2) rebuttal message structure.

The second independent variable is the subject's familiarity with the issues and arguments within the message. For the constructive structure treatments, i.e., only arguments supporting the source's position, the familiarity variable has three values: (1) fewer issues than those with which the subject is familiar—and arguments supporting those issues which are antagonistic to arguments on which the subject had prior information; (2) value "1", plus the remaining issues with which the subject is familiar—and arguments supporting these remaining issues which are antagonistic to arguments on which the subject had prior information; and, (3) value "2" plus issue(s) on which the subject had no prior information—and arguments supporting those issue(s) on which the subject also had no prior information.

The rebuttal message structure, i.e., taking into account arguments which oppose the source's position, has three analogous values for the familiarity variable. The only difference is the inclusion of arguments supportive of the subject's prior position, i.e., antagonistic to the source's position. For the "fewer" case, this includes fewer source-antagonistic arguments than those on which the subject had prior information; for the "equal" case, this includes all source-antagonistic arguments on which the subject had prior information; for the "more" case, this includes source-antagonistic arguments on which the subject had prior information.

This arrangement of the variables leads to six experimental treatments. For all treatments, the subject's prior evaluation of the message topic is the same, i.e., subjects are opposed to the position the source will take. For all treatments, the subject's prior informa-

tion level is the same, i.e., subjects have knowledge of two issues, and have knowledge of an argument under each of these issues which is antagonistic to the position the source will take.

The six types of message-treatment cells can be schematized as follows:

Argumentative Structure	Issue Familiarity		
	Less	Equal	More
Constructive	А	В	С
Rebuttal	D	Е	F

The hypotheses are based on two major propositions concerning the way in which the independent variables operate. These are:

- 1. The more information which the source presents supporting his position, the greater will be the attitude change elicited.
- 2. The more the source takes into account the arguments antagonistic to his position, the greater will be the attitude change elicited.

With respect to the effects of information and "taking into

account" on subjects' evaluations of the source, i.e., source credibility,

these propositions are sufficient to derive two basic hypotheses:

- Hypothesis I. Perceived source <u>safety</u> and <u>qualification</u> is positively related to the extent to which the source takes into account issues and arguments opposed to his position, i.e., source credibility for rebuttal message structure will be greater than source credibility for constructive message structure.
- Hypothesis II. Perceived source <u>safety</u> and <u>qualification</u> is positively related to the number of issues and arguments which the source provides, i.e., source credibility for "more" information will be greater than for "equal" will be greater than for "less".

When we turn to "information" and antagonistic arguments "taken into account" and their separate effects on subjects' evaluations of the topic, i.e., attitude change, one of the two basic propositions needs to be modified. It still holds to argue that the source's influence will be positively related to the amount of information which he presents supporting his position (Proposition 1); however, Proposition 2 needs to be modified as follows:

2a. The more the source takes into account the arguments antagonistic to his position, the more influence he will have ... given that the source does not take into account arguments which were previously unfamiliar to the receiver.

This modification is necessitated by the opposition of the two propositions for that specific situation in which the source is providing "more" information, but the information is antagonistic to his position (see message-treatment cell F). The first proposition would lead to the conclusion that the F treatment would be less effective, i.e., more information is being given that supports the receiver's position. The second proposition would lead to the conclusion that the F treatment would be more effective, i.e., more arguments antagonistic to the source's position are being taken into account. The resultant of these two antagonistic vectors is not predictable. For that reason, cell F ("more" and "rebuttal") cannot be included in the general tests of the effects of amount of information and "taking into account" on subjects' acceptance of influence. Special hypotheses are needed to predict results in cell F. The general tests can be specified in the following two hypotheses:

- Hypothesis III. Given that no new issues are included in the message, ... attitude change is positively related to the extent to which the source takes into account issues and arguments opposed to his position, i.e., influence acceptance for cells (D + E) > (A + B).
- Hypothesis IV. Given that no new issues are included in the message ... attitude change is positively related to the number of issues and arguments which the source provides, i.e., attitude change (B + E) > (A + D).

For messages which do not include any arguments antagonistic to the source's position, i.e., constructive argumentative structure, Hypothesis IV can be extended to include unfamiliar issues (Hypothesis IVa); however, this is stated as a separate hypothesis since a different statistical test needs to be used.

Hypothesis IVa. Given constructive argumentative structure, a message that presents more issues than those with which the receiver is familiar elicits greater attitude change than a message which presents only those issues with which the receiver is familiar, i.e., attitude change C > B.

The special test for cell F requires a comparison of the results in F with those in cell E. The F treatment includes all of E, but adds a new issue. More specifically, it provides an argument on that issue which supports the source's position and it provides an argument on that issue which is antagonistic to the source's position, i.e., it supports the receiver's prior position with an argument which was previously unfamiliar to the receiver.

Since the antagonistic argument is consistent with the position the receiver originally held, this argument should strengthen that original position more than the source-consistent argument weakens the original position. The consequence of taking into account unfamiliar antagonistic arguments is tested in the following hypothesis:

> Hypothesis V. Given a rebuttal argumentative structure, a message that only provides information on all issues with which the receiver is familiar (cell E) will elicit more influence acceptance than will a message that also provides information on unfamiliar issues, i.e., influence acceptance for cell E>F.

It should be noted that a similar prediction cannot be made between cell F and cell D (a rebuttal message presenting information on fewer issues than those with which the receiver is already familiar). While cells E and F differ only in that F presents information on unfamiliar issues and E does not, i.e., both present the same familiar issues and arguments for these issues, cells D and F differ both with respect to the familiar and the unfamiliar issues presented. The rationale that has been developed does not consider the difference in influence acceptance between not presenting all familiar antagonistic arguments and presenting new antagonistic arguments in addition to those which are already familiar. However, the difference between influence acceptance will be calculated for heuristic purposes.

Hypotheses were derived from two major propositions which predicated the effect of successive amounts of information presented and the effect of arguments antagonistic to the source's position "taken into account" on source credibility (Hypotheses I and II) and attitude change (Hypotheses III and IV). Both sets of hypotheses predicted a similar relationship between the message treatments and the dependent variables, i.e., (1) a positive relationship between amount of information presented and both source credibility and atti-

tude change, and (2) higher source credibility and greater attitude change when antagonistic arguments are taken into account.

Previously, a rationale was developed concerning the functioning of source credibility as a mediating factor in changing attitudes and research evidence was provided which indicated that attitude change and source credibility are positively related. Thus, the removal of the effect of credibility from attitude change should reduce the effect on attitude change of increasing amounts of information and "taking into account". The general tests can be specified in the following two hypotheses:

- Hypothesis VI. Given that no new issues are included in the message ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the extent to which the source takes into account issues and arguments opposed to his position.
- Hypothesis VII. Given that no new issues are included in the message ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the number of issues and arguments which the source provides.
- Hypothesis VIIa. Given a constructive argumentative structure ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the number of issues and arguments which the source provides.

The relative effect on influence of removing the effect of credibility from attitude change in cell F requires a special test comparing the results in cell F with those in cell E. Credibility is predicted to be greater in cell F than in cell E (Hypothesis II),

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but attitude change is predicted to be greater in cell E than in cell F (Hypothesis V). Removal of the effect of credibility from influence acceptance in both cells should reduce influence acceptance in cell F more than in cell E.

Hypothesis VIII. Given a rebuttal argumentative structure ... if the relationship between source credibility and attitude change is eliminated, the difference in influence acceptance will be increased between (a) a message that provides information only on all issues with which the receiver is familiar (cell E) and (b) a message that also provides information on an unfamiliar issue (cell F).

#### CHAPTER II

#### METHOD

This chapter describes the message topic and the construction of messages; the independent, control, and dependent variables; the sample; the experimental design and analysis techniques; and, the experimental procedures employed in the study.

#### The Message Topic

"The current civil nuclear defense program" was selected as the message topic for two major reasons. First, it was felt that, although most people are aware of the concept "civil defense," they neither have strong opinions about the nuclear defense aspects of civil defense nor are they aware of the majority of controversial but somewhat esoteric issues involved. Therefore, it seemed likely that opposing arguments about a number of nuclear defense issues could be written which would be <u>unfamiliar</u> to the subjects. A pilot investigation utilizing a small number of graduate students and student wives determined which of a series of such arguments were familiar or unfamiliar. Only those arguments for which there was high agreement as to their unfamiliarity were considered for the experimental messages.

Second, the nature of the experimental design requires that the two opposing positions taken on the "current civil nuclear defense program" be implicit rebuttals of each other. Three separate civil nuclear defense issues were selected:

(1) Fallout Protection, (2) Firestorm Protection, and (3) Postattack Recovery. These three issues are sufficiently separable for arguments to be constructed for one issue that does not easily generalize to the other two.

## Message Segments

For each of the civil nuclear defense issues, fallout protection, firestorm protection, and postattack recovery, one message segment was written which was clearly favorable to the "current civil nuclear defense program" and one message segment was written which was clearly unfavorable to the program. The three favorable message segments lead to the conclusion that the current program is appropriately conceived. The three unfavorable message segments lead to the conclusion that the current program must be changed to reflect its purpose. An argument for <u>one</u> issue leading to <u>one</u> conclusion has been termed a <u>constructive segment</u>. Since constructive segments make no reference to any opposing arguments, they could be termed "one-sided" but, because of the ambiguity associated with "message sidedness," this terminology has been avoided.

A brief description of the six constructive segments is given in Figure 1. The texts of each are included in Appendix A.

Testing of several of the theoretic hypotheses requires that antagonistic arguments also be taken into account in some of the persuasive messages. None of the constructive segments, shown in Figure 1, considers opposing arguments. However, since any favorable/unfavorable pair of the constructive segments are implicit rebuttals of each other, messages that consider opposing arguments can conveniently be derived from the constructive segments. This was accomplished by incorporating a weakened

Issue 1. FALLOUT PROTECTION

- 1(a) Favorable to the current program.
- This segment asserts that fallout would be the <u>major</u> hazard and evidence to support this position is provided. Specific fallout shelter operations are described and their lifesaving potential is detailed.

Issue 2. FIRESTORM PROTECTION

- 2(a) Favorable
- This segment asserts that firestorms, although a concern, would not present a widespread hazard and evidence is provided to support this position. Appropriate steps which have been taken in areas where firestorms might occur are described and evidence to support the appropriateness of these steps is provided.

# Issue 3. POSTATTACK RECOVERY

# 3(a) Favorable

This segment asserts that recovery programs are necessarily of <u>lower</u> priority than preattack programs and this position is defended. However, a number of important programs being developed are discussed and evidence to support their appropriateness is provided.

- 1(b) Unfavorable to the current program.
- This segment states that fallout would be a <u>relatively minor</u> hazard and evidence is provided to support this position. The <u>shortcomings</u> of the current program are pointed out and the possible consequences are described.

## 2(b) Unfavorable

This segment asserts that firestorms would present a <u>major hazard</u>, would be widespread, and evidence is provided to support this position. Civil defense is criticized for an unrealistic program and evidence is provided to support this criticism. The possible consequences of the present shortcomings are described.

# 3(b) Unfavorable

This segment asserts that a full range of thoroughly prepared recovery programs would be <u>essential</u> to survival and evidence is provided to support this position. Civil defense is criticized for not having developed these programs and the consequences of this failure are described.

\* \* \* \* \*

# Conclusion:

The current civil defense program is appropriately conceived.

#### Conclusion:

The civil defense program must be changed to reflect its purpose. paraphrase of the argument from one segment into the opposing segment of any pair. The combination of constructive segments in this manner has been termed a <u>rebuttal</u> segment.

A rebuttal segment could be termed a type of "two-sided" segment but, once again, the ambiguous terminology has been avoided. The texts of the six rebuttal segments are given in Appendix B. The following are examples of <u>rebuttal</u> segments.

Issue 1. FALLOUT PROTECTION

- 1(c) Favorable to the current program
- This segment presents a weakened paraphrase of the antagonistic argument presented in constructive segment 1(b) (FALLOUT PROTECTION--unfavorable to the current program). Transitions were made to the rebuttal of this argument which was constructive segment 1(a) (FALLOUT PROTECTION--favorable to the current program). 1(a) attempted to destroy the argument of 1(b) in general, rather than point-by-point.

# 1(d) <u>Unfavorable</u> to the current program

This segment presents a weakened paraphrase of the antagonistic argument presented in constructive segment 1(a) (FALLOUT PROTECTION--favorable to the current program). Transitions were made to the rebuttal of this argument which was constructive segment 1(b) (FALLOUT PROTECTION--unfavorable to the current program). 1(b) attempted to destroy the argument of 1(a) in general, rather than point-by-point.

\* \* \* \* \*

#### Conclusion:

Conclusion:

The current civil defense program is appropriately conceived.

The civil defense program must be changed to reflect its purpose.

The four other rebuttal segments, two for issue 2 and two for

issue 3, were constructed in the same manner as FALLOUT PROTECTION

rebuttal segments.

# Independent Variables

A test of the hypotheses requires that the experimental messages vary on two dimensions; (1) the number of issues presented relative to the receiver's prior familiarity with issues and (2) the presence or absence in the message of arguments antagonistic to the communicator's position (i.e., rebuttal versus constructive).

(1) <u>Relative Issue Familiarity</u>: This variable is the number of issues presented in the message relative to an individual's prior familiarity with issues. Operationalizing the variable required that the specific information held by the individual be known prior to his being presented the experimental message.

Prior familiarity was manipulated in the following manner. First, it was assumed that the three issues were themselves unfamiliar or only minimally familiar to the subjects and that the specific argument associated with each issue was unfamiliar prior to any experimental manipulation. Then, at an experimental session one week before the presentation of the treatment messages, each subject received one of the messages designed to manipulate information level. The three favorable constructive segments previously described were combined two at a time in all possible ways to make three messages. The same procedure was followed for unfavorable construction segments. This produced a total of six familiarity induction messages.
Favorable	Unfavorable
Fallout and Firestorm Protection	(4) Fallout and Firestorm Protection
segments [l(a) + 2(a)]*	[1(b) + 2(b) ]
Fallout and Postattack Recovery	(5) Fallout and Postattack Recovery
[l(a) + 3(a)]	[1(b) + 3(b)]
Firestorms and Postattack Recovery	(6) Firestorms and Postattack Recovery
[2(a) + 3(a)]	[2(b) + 3(b) ]
	<u>Favorable</u> Fallout and Firestorm Protection segments [1(a) + 2(a)]* Fallout and Postattack Recovery [1(a) + 3(a)] Firestorms and Postattack Recovery [2(a) + 3(a)]

\*Coded same as Figure 1.

Figure 2. The Six Familiarity Induction Messages

Prior familiarity with issues that would be treated subsequently in the experimental messages was now established. The variable <u>relative</u> <u>issue familiarity</u> can take three values. Each of the  $T_2$  experimental messages presented one of the following:

- Value 1. -- <u>fewer</u> issues than those with which the receiver was previously familiar. (Operationally, arguments concerning only one issue were presented.)
- Value 2. -- the <u>same</u> issues with which the receiver was previously familiar. (Arguments concerning only <u>two</u> issues were presented.)
- Value 3. the <u>same</u> issues with which the receiver was familiar plus an <u>unfamiliar</u> issue. (Arguments concerning <u>three</u> issues were presented.)

Since all of the familiarity induction messages provided arguments on two and only two sub-topics, the operationalization of the message variable "relative issue familiarity" corresponds to the classification levels.

(2) <u>Constructive versus rebuttal argumentative structure</u>: All of the experimental messages (those presented at  $T_2$ ) were either constructive (containing no arguments antagonistic to the communicator's position) or rebuttal messages (containing antagonistic arguments). The <u>constructive</u> messages were all possible combinations of constructive segments and the <u>rebuttal</u> messages were all possible combinations of rebuttal segments. Constructive segments and rebuttal segments have previously been described. Since the two independent variables were completely crossed, the number of segments in both the constructive messages and the rebuttal messages was, for each message, dependent upon the other variable message condition "relative issue familiarity."

## Control Variables

The control variables employed can be classified in three categories: (a) a test of the adequacy of the manipulation of the source's position on the topic; (b) those used to account for any differences in persuasive strengths of messages; and (c) social controls used to mask the intent of the experiment.

(a) <u>Perceived source favorableness to experimental concepts</u>. To determine if the position advocated in the message was perceived as intended, subjects at both experimental sessions were asked to respond to the question "In your opinion, would you say that the person who wrote this message was favorable or unfavorable to 'the current civil nuclear defense program.'" Opinions were recorded on the single 7-point semantic differential scale "favorable-unfavorable."

(B) Persuasive strength of messages

(1) <u>Favorable versus unfavorable messages</u>. Possible persuasive differences between favorable and unfavorable messages were controlled. Half of the subjects received a familiarity induction which contained arguments leading to the conclusion that was favorable to the current program. At the second session these subjects received one of the message treatments which led to the conclusion that was unfavorable to the current civil defense program. This procedure was reversed for the other half of the subjects.

(2) <u>Between sub-topic segments within favorable or unfavorable messages</u>. To control for possible persuasive differences between issue segments within favorable or unfavorable messages, all possible segment combinations for any treatment condition were counter-balanced in the experimental design.

## (c) Social Controls.

To mask the intent of the experiment, items were included in the questionnaires at both experimental sessions which were otherwise irrelevant to the study. These included evaluation of the clarity of the messages and the novelty of the information provided. The actual questions asked and the scales used are included in the two questionnaires which are presented in Appendix C and Appendix D.

## Dependent Variables

(1) Attitude Change on the experimental concept.

For those subjects who received a message favorable to the experimental concept at  $T_2$ , the attitude change score was their  $T_2$  evaluation minus their  $T_1$  evaluation. For subjects who received an unfavorable message at  $T_2$ , the attitude change score was their  $T_1$  minus  $T_2$  evaluation. Change scores were divided by 5, the number of scales in the instrument. Mean change scores could range from -6 (maximum possible "boomerang") to +6 (maximum change in the direction advocated by the  $T_2$  message).

At both experimental sessions subjects indicated their own attitudes toward the "current civil nuclear defense program" by ratings on the same five 7-point semantic differential scales. These scales are those suggested by Osgood, Suci and Tannenbaum (1957) to measure the evaluative dimension. The scales used were good-bad, wise-foolish, valuableworthless, fair-unfair, and honest-dishonest. Scale ends were randomly reversed to minimize response set. Responses were coded 1 (unfavorable) through 7 (favorable) and summed over the five scales.

To minimize response consistency from  $T_1$  to  $T_2$  the five instrument scales were embedded in five additional scales at  $T_2$ . The additional scales were also selected from those suggested by Osgood, Suci and Tannenbaum (1957) to measure the evaluative dimension. These filler scales were strong-weak, successful-unsuccessful, important-unimportant, useful-useless and appropriate-inappropriate.

(2) <u>Credibility of the Message Source (time-two)</u>. Subjects responded to the question "How would you rate the person who wrote this passage as a source of information on the issue 'the current civil nuclear defense program'?" Evaluations were indicated on twelve 7-point semantic differential scales measuring the source's perceived

Safety, Qualification and Dynamism. The four scales used for each dimension were selected from a list provided by Berlo, Lemert and Mertz (1965). Scales were presented in mixed order with scale ends randomly reversed. Summary ratings for each dimension were computed by summing across the four scales and dividing by four. The <u>Safety</u> scales were safe-dangerous, just-unjust, honest-dishonest and kind-cruel; the <u>Qualification</u> scales were qualified-unqualified, informed-uninformed, experienced-inexperienced and skilled-unskilled; the <u>Dynamism</u> scales were bold-timid, emphatic-hesitant, active-passive and energetic-tired.

#### Subjects

The study used 12 intact groups of undergraduate students enrolled in a spring course in the College of Business at Michigan State University. Each section had approximately 30 students, most of whom were junior or senior males. The experimental sessions were conducted during regularly scheduled classroom periods.

## Experimental Design

This study was designed to compare the persuasiveness of constructive and rebuttal argumentative structures which present less, the same, or more issues and arguments than those with which the receiver is already familiar. The study was also designed to compare the perceived source credibility induced by messages which varied on these two dimensions, and to determine the mediating effect of the induced credibility on message persuasiveness.

Basically the study is a two variable  $3 \times 2$  factorial design (ignoring the treatment conditions which were employed to control for any

differential effectiveness attributable to message segments). The independent message variables were (1) <u>constructive</u> versus <u>rebuttal</u> argumentative structure, and (2) <u>fewer</u> versus <u>same</u> versus <u>more</u> issues presented relative to the issues with which the individual was already familiar. The dependent variables were (1) <u>attitude change</u> on the experimental concept, and (2) perceived <u>safety</u> and <u>qualification</u> of the message source.

Relative Issue Familiarity

	-	Fewer	Same	More	
Argumentative Structure	Constructive	А	В	С	1 1 1
	Rebuttal	D	E	F	

Figure 3. The Basic Experimental Design\*

This experimental design required that the individuals' familiarity with specific issues and arguments be ascertained prior to presenting the various message treatments. The decision to manipulate

<sup>\*</sup>This is the basic experimental design. It presumes that (1) order of message presentation (favorable message first versus unfavorable message first) does not affect the criterion variable, and (2) the individual message segments are equally persuasive. The complete experimental design, without collapsing either order of message presentation or message segment counterbalanced combinations, is given in Appendix E.

familiarity rather than to determine familiarity through pretesting procedures was based upon a number of considerations. The pretesting procedure would have resulted in subjects self-selecting themselves into treatment conditions on the basis of their prior familiarity with the content of the subsequent message. This would have left uncontrolled any subject variables associated with a particular information level. That would have obscured the interpretation of any findings. Also, since the rationale of the study concerns the relationship between specific known arguments and their inclusion in a message, pretesting to determine specific information would have created sensitization problems.

At a familiarity induction session  $(T_1)$ , subjects received one of the six messages previously discussed and represented in Figure 2. Since there were six messages and twelve intact groups of subjects, each message was randomly assigned to two groups. All subjects in a particular group received the same message at this session. Therefore, at the induction session, all groups were familiarized with arguments concerning one of the possible combinations of two issues.

One week later, all subjects read one of the six treatment messages in the basic design. This message led to a conclusion which opposed that of the message which was read at the familiarity induction session. The appropriate versions for each of the six message treatments were randomly distributed within intact groups. Thus, an intact group did not constitute a cell in the design, and any biasing effects that might be associated with any of the classroom groups were evenly distributed across all of the  $3 \times 2$  message treatments.

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#### Data Analysis

Following the second experimental session  $T_1$  and  $T_2$  responses were matched on the basis of name and student number. Some attrition occurred between the two experimental sessions but the experimental design is such that different attrition rates across cells could only be random. A total of 15 paired questionnaires were randomly discarded from the appropriate cells to equalize cell n's at 20, the cell size of the smallest cell (cell n = 20 with  $T_1/T_2$  message order not collapsed). Analyses were performed on the data provided by 240 subjects.

Hypotheses I through V are tested through various analyses of variance and t-tests comparing mean credibility scores and mean attitude change scores among the six message-treatment groups. Hypotheses VI through VIII make predictions about what the relationships between the message treatment groups and attitude change would-be with the effect of source credibility removed from the attitude change scores (i.e., if the perceived credibility of the source was the same for all groups).

To test Hypotheses VI through VIII requires correlational techniques. Specifically, the hypotheses are tested by comparing the difference between the zero-order correlation  $r_{ab}$  ("a" is argumentative structure or issue familiarity, as the case may be, and "b" is attitude change) and the part correlation  $r_{a(b.c)}$  ("c", source credibility, is removed from attitude change). Hypotheses VI and VII predict  $r_{ab} r_{a(b.c)}$  and Hypothesis VIII predicts the reverse.

Argumentative structure is dichotomous and, while issue familiarity has three values, the hypotheses involving issue familiarity are

restricted by the rationale to only two of these values for any single hypothesis. Thus, the appropriate r's are point biserial.

It is not possible, however, to test the significance of the difference between a zero-order and part correlation computed on the same sample because the two are not independent. Accordingly, each treatment group was randomly split into two analysis groups of equal size. A zero-order r is computed on one group and a part r on the other. The significance of the difference between the two independent r's is then computed to test each of the three hypotheses.

# Experimental Procedures

Familiarity induction session  $(T_1)$ : The following procedures were followed in sequence at this initial session.

(1) The experimenter entered the classroom, was introduced by the regular instructor, solicited the cooperation of the students in a "Communication Survey" under the auspices of the College of Communication Arts, and distributed the questionnaires.

(2) An introduction page stated that the survey was one of a series concerned with the way college students react to various kinds of information on public issues. It also stated that the students should read carefully because they would be required to make a number of evaluations of the passage they were about to read.

(3) Subjects then read the message designed to familiarize them with specific information and arguments about the experimental concept.

(4) Subjects then read a one page description of the way to use the semantic differential scales.

(5) Subjects then responded to the directive "Before you rate the passage, we would like your own evaluation of 'the current civil nuclear defense program.'"

(6) Subjects then rated the source of the passage, gave their opinion of the writer's position on the experimental concept, indicated their familiarity with the content of the passage, and rated the clarity of the passage.

(7) When everyone was finished, the questionnaires were collected, the experimenter thanked the subjects for their cooperation, and left the room.

No mention was made of a second session and the various instructors were cautioned not to provide any clues that there would be a second session.

Message manipulation session  $(T_2)$ : The following procedures were followed at this session, which took place one week after  $T_1$ .

(1) A different experimenter entered the classroom and enlisted the cooperation of the students in a "Communication Survey." He stated that a large number of students had taken part in an earlier pilot study and that he was aware that some of those present had taken part, but that that was all right. The questionnaires were then randomly distributed.

(2) An attempt was made to make the general appearance of the questionnaire different from  $T_1$ : however, it was felt that any further attempt to dissassociate the two not only would be unsuccessful, but would

antagonize the subjects by insulting their intelligence. The introductory page elaborated on the experimenter's opening remarks. It stated that the four public issues used in the pilot study had been (1) Legislative Reapportionment, (2) The Office of Economic Opportunity, (3) The Civil Defense Program, and (4) Medicare. Subjects were informed that The Civil Defense Program had been selected because it met the requirements of the present study. A note at the bottom of the introduction page informed the student that, if he participated in the pilot study and if the topic happened to be Civil Defense, it did not matter.

(3) Subjects then read one of the versions of one of the treatment messages.

(4) The procedures for the remainder of the questionnaire were the same as in the  $T_1$  questionnaire.

#### CHAPTER III

#### RESULTS

# T<sub>1</sub> Attitudes Toward the Civil Defense Topic

The experimental manipulations require three issues relevant to the topic of the present civil defense policy. For each issue, there is one argument supporting the policy and one opposing it. In order to vary the subjects' familiarity at  $T_2$  with issues and arguments antagonistic to the source's position, each subject was given two arguments on one or the other side of the topic at  $T_1$ . This produced six message-treatment groups. For control purposes, the various arguments on one or the other side of the topic must be equally persuasive; i.e., there must be no significant differences in mean attitude scores among the three groups which received favorable information, and there must be no significant differences among the three groups which received negative information.

The hypotheses are limited to situations in which receivers are opposed to the position of the source. For control purposes, at  $T_1$  positive attitudes had to be induced for half of the subjects and negative attitudes had to be induced for the other half.

Table 1 presents the mean  $T_1$  attitude scores for each of the six message-treatment groups, and the results of an analysis of variance and t-tests among the means. The pro-topic and anti-topic **means** are significantly different overall; furthermore, the mean difference between pro and con groups is significant for each of the three message segment treatments.

Finally, there are no significant differences among the means within the pro or con message treatment groups, nor is there an interaction between pro-anti and segments. The two control criteria are satisfied.

	Mo	coom For	·····	· +- •		
Message Segments	Favor	able	Unfavo	orable		
Fallout + Firestorms	Mean 5.43	(N) (41)	Mean 3.86	(N) (37)	D 1.57	$\frac{t}{6.37} < \frac{p}{.01}$
Fallout + Recovery	5.46	(43)	4.20	(45)	1.26	5.12 < .01
Firestorms + Recovery	5.38	(36)	4.37	(38)	1.01	4.11 < .01
Overall	5.43	(120)	4.15	(120)	1.28	
Source of variance		d.f.	MS		F	p
Favorability		1	2.45		79.03	< .01
Segments		2	•03		.97	n.s.
Favorability X Segments		2	•04	5	1.45	n.s.
Error	2	34	•03	1		

Table 1.	Mean T <sub>1</sub> attitudes	toward civil defense	for the six
	message-treatment	groups, and analyses	of
	differences among	the means	

The Attitudinal Position Taken in the Message

At both  $T_1$  (the argument familiarity manipulation session) and  $T_2$  (the main experimental session), subjects were asked to state whether the message was favorable or unfavorable toward the present civil defense policy. This check was made to insure that the messages were perceived as intended. Of the 240 subjects, 226 or 94% perceived the  $T_1$  message as intended and 215 or 90% perceived the  $T_2$  message as intended.

Tests of the Theoretic Hypotheses

- Hypothesis I. Perceived source <u>safety</u> and <u>qualification</u> is positively related to the extent to which the source takes into account issues and arguments opposed to his position, i.e., source credibility for rebuttal message structure will be greater than source credibility for constructive message structure.
- Hypothesis II. Perceived source <u>safety</u> and <u>qualification</u> is positively related to the number of issues and arguments which the source provides, i.e., source credibility for "more" information will be greater than for "equal" will be greater than for "less".

Hypothesis I asserts that rebuttal messages will result in evaluations of the source's safety and qualification which are higher than the evaluations resulting from constructive messages. Hypothesis II states that the evaluations on these two dimensions of source credibility will increase as the number of issues and arguments presented increases. Separate two-way analysis of variance were performed to test these hypotheses with respect to first safety evaluations and then to qualification evaluations.\*

<sup>\*</sup>Three-way analyses were performed first to test whether the control variable of "message favorability" (i.e., a message favorable to the topic vs. a message unfavorable to the topic) had any effect. It did not, and favorable-unfavorable groups were combined (no F including favorability even approached significance).

<u>Safety evaluations</u>. Group means on safety, and the analysis of the effects of the message treatments on safety evaluations are contained in Table 2. Neither of the hypothesized main effects were significant. There is no relationship between message treatments and safety evaluations; i.e., Hypotheses I and II are not supported for safety evaluations.

Table 2. Mean safety evaluations for the six message-treatment groups, and the analysis of variance among the means (n = 40)

				Issue	Familia	arity	 	
		ess	S	ame	Mc	ore	 Overall	
Argumentative Structure								
Constructive	<b>(</b> A)	4.65	<b>(</b> B)	4.83	(C)	4.96	4.81	
Rebuttal	(D)	4.88	<b>(</b> E)	4.77	(F)	4 <b>.7</b> 0	4.78	
Overall		4.765		4.80		4.83	4.80	
Source of Variance		df		<u>M.S.</u>		F	P	
Argumentative Struct	ture	1		.051		.06	n.s.	
Issue Familiarity		2		.086		.10	n.s.	
Structure X Issues		2		1.169		1 <b>.37</b>	n.s.	
Error		234		.856				

Group means and the analysis of the effects of the message treatments on source qualification evaluations are summarized in Table 3\*. Again the predicted main effects were not significant, indicating that neither message variable produced differences in the evaluations of source qualification. Hypotheses I and II are not supported for qualification evaluations.

	Issue	e Familiarity		
Structure	Less	Same	Mare	Overall
Constructive	(A) 4.69	(B) 4.99	(C) 5.05	4.91
Rebuttal	(D) 5.15	(E) 5.16	(F) 5.15	5.15
Overall	4.92	5.075	5.10	5.03
Source of Variance	df	M.S.	F	P
Argumentative Structure	e 1	3.626	2.80	n.s.
Issue Familiarity	2	<b>.</b> 772	.60	n.s.
Structure X Issue	2	•732	.57	n.s.
Error	234	1.294		

Table 3. Mean qualification evaluation for the six messagetreatment groups, and the analysis of variance among the means.

<sup>\*</sup>Means are based on two rather than four qualification scales. The scales "skilled-unskilled" and "experienced-inexperienced" were inadvertently omitted from the questionnaire.

Hypotheses III, IV, and V are concerned with the effect of various treatment conditions on attitude change. The six message-treatment group means needed to test Hypotheses III, IV, and V are presented in Table 4.

<u>۸</u>	Issue			
Structure	Less	Same	More	Overall
Constructive	(A) .135	(B).635	(C) .615	.462
Rebuttal	(D) .590	(E)1.010	(F) .460	.687
Overall	•363	.823	•538	.575

Table 4. Mean attitude change scores on the experimental concept for the six message-treatment groups (cell n = 40)

- Hypothesis III. Given that no new issues are included in the message, ... attitude change is positively related to the extent to which the source takes into account issues and arguments opposed to his position, i.e., influence acceptance for cells (D + E) > (A + B).
- Hypothesis IV. Given that no new issues are included in the message ... attitude change is positively related to the number of issues and arguments which the source provides, i.e., attitude change (B+ E) > (A + D).

Hypotheses III and IV are restricted to the four experimental treatments that do not include new issues or new antagonistic arguments (cells A,B,D, and E). Hypothesis III asserts that rebuttal messages will elicit greater attitude change than constructive messages will, given that no new issues are included. Hypothesis IV states that the amount of attitude change will increase as the number of issues presented increases, again provided that no new issues are included.

A two-way analysis of variance can be used to test both of these hypotheses simultaneously (see Table 5)\*. The two hypotheses are tested by the significance of the two main effects. Both are significant, and the

Table 5. Analysis of variance and simple-effect analyses of mean attitude change scores for four of the message-treatment groups (cells C and F eliminated).

A. Analysis of Variance Summary

Source of Variance	df	M.S.	F		_ <u>p_</u>
Argumentative Structure	l	172.22	9.97	V	.01
Issue Familiarity	1	211.10	12.22	V	.01
Structure X Issues	1	2.11			n.s.
Error	156	17.28			

B. Cell Means and T-Tests for Simple Effects Differences

Argumentative		Issue			
Structure		Less	Same	D	<u>t</u>
Constructive		(A) .135	(B) .635	.50	2.68*
Rebuttal		(D) .590	(E) 1.010	•42	2.26*
	D t	。455 2 <b>.</b> 450*	.375 2.02*		
** • •	10 100				

\*t<sub>.975</sub> = 1.98, df = 156

<sup>\*</sup>Again, the data first were analyzed to test for differences among the two values of the control variable, message favorability. It had no effect and groups were combined (no F including favorability even approached significance).

mean differences are in the hypothesized direction. There is no significant interaction between number of issues and constructiverebuttal structure. Simple effects analyses (see table 5) reveal that the rebuttal structure is more effective than the constructive structure for both levels of information, and that more information is more effective than less information for both constructive and rebuttal structures. Hypotheses III and IV are confirmed.

Hypothesis IVa is an extension of Hypothesis IV for constructive messages only. Hypothesis IV states that attitude change will increase as the number of issues and arguments presented increases. It was partially confirmed under the test of Hypothesis IV when it was found that attitude change was significantly higher for "equal" information than it was for "less." Hypothesis IVa states that attitude change should be higher for the "more" information treatment than it is for "equal." The data do not support that hypothesis. In fact, the mean for "more" information (.615) is slightly but not significantly less than it is for "equal" information (.635). Hypothesis IVa is not confirmed, and, therefore, the confirmation of Hypothesis IV is lessened to that extent.

Hypothesis V. Given a rebuttal argumentative structure, a message that only provides information on all issues with which the receiver is familiar (cell E) will elicit more influence acceptance than will a message that also provides information on unfamiliar issues, i.e., influence acceptance for cell E>F.

This hypothesis states that a rebuttal message that only takes into account all antagonistic arguments with which the receiver is familiar will elicit more attitude change than will a rebuttal message which also presents

antagonistic arguments with which the receiver was not previously familiar. This hypothesis was tested by a t-test comparing the mean attitude change scores for those two cells (E and F). The mean for the "all familiar" group was 1.010 and for the "also unfamiliar" group was .460. The difference between these two means is statistically significant (t = 2.48, df=78, p<.05). Hypothesis V is confirmed. The inclusion of an unfamiliar argument in addition to all familiar arguments antagonistic to the source's position reduced the attitude change elicited by the message.

For heuristic purposes, differences in the mean attitude change scores were compared between the rebuttal treatment group which received arguments on fewer issues than those with which they were familiar (mean = .590) and the rebuttal treatment group which received arguments on more issues than those with which they were familiar (mean = .460). The two means did not differ significantly (t = .13).

- Hypothesis VI. Given that no new issues are included in the message ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the extent to which the source takes into account issues and arguments opposed to his position.
- Hypothesis VII. Given that no new issues are included in the message ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the number of issues and arguments which the source provides.

Hypothesis VIIa. Given a constructive argumentative structure ... if the relationship between source credibility and attitude change is eliminated, the positive relationship will be reduced between attitude change and the number of issues and arguments which the source provides.

Hypotheses VI, VII, VIIa are concerned with the reductions in the relationship between the independent variables and attitude change that will occur when the relationship between source credibility and attitude change is eliminated. The lack of support for Hypotheses I and II obviate any statistical tests of these hypotheses. Since there is nothing other than a chance relationship between the message-treatment variables and source evaluations, "removal" of the relationship between credibility and attitude change can not reduce the relationships between the message-treatment variables and attitude change. Thus, Hypotheses VI, VII, VIIa are not supported.

Hypothesis VIII. Given a rebuttal argumentative structure ... if the relationship between source credibility and attitude change is eliminated, the difference in influence acceptance will be increased between (a) a message that provides information only on all issues with which the receiver is familiar (cell E) and (b) a message that also provides information on an unfamiliar issue (cell F).

This hypothesis states that eliminating the effect of credibility on attitude change will reduce attitude change less if only all familiar antagonistic arguments are included in a message (cell E) than if unfamiliar arguments are also included (cell F), i.e., source credibility is predicted to be higher in F than E (Hypothesis V). The difference in the zero-order correlation between issues and attitude change ( $r_{ab} = .259$ ) and the part correlation with the affect of credibility on attitude change eliminated ( $r_{a(b.c)} = .267$ , calculated from  $r_{ab} = .266$ ;  $r_{ac} = .001$ ;  $r_{bc} = .102$ ) is so slight that a test of significance was not performed. Thus, Hypothesis VIII was not supported.

#### CHAPTER IV

# SUMMARY AND DISCUSSION

This study investigated three types of hypotheses. These hypotheses concerned the effects of variation (a) in the argumentative structure of the message and (b) the prior familiarity receivers had for the issues presented on (1) two dimensions of the credibility of the message source--safety and qualification, (2) attitude change, and (3) attitute change after removal of the effect of credibility on attitude change.

The first two hypotheses predicted that the credibility of the source would increase as the number of topic-related issues presented in the message increased, and would increase when arguments antagonistic to the source's position were taken into account. Neither of the predicted relationships for either dimension of credibility was supported. There was no evidence that the message variables produced any variability in source evaluation.

The second type of hypotheses concerned the effects of the message variables on attitude change. When messages presented only issues with which the receiver was already familiar, presenting all familiar issues elicited more attitude change than presenting only some of the issues.\*

<sup>\*</sup>Throughout the discussion it whould be recalled that "some" or "fewer" issues refers to one of the issues the receiver was exposed to at time-one. "All" familiar issues refers to the same two issues presented at time-one. The expression "also unfamiliar issues" refers to the same two issues presented at time-one, plus the third issue which was not then presented.

This held for both constructive and rebuttal argumentative structures, as predicted. Also, when just familiar issues were presented, rebuttal argumentative structure elicited more attitude change than constructive structure. Again, as predicted, this held when all familiar issues were presented or when less than all familiar issues were presented.

Predictions were also made concerning the effect on attitude change of presenting unfamiliar issues. If the message only presented arguments which are consistent with the source's advocated position, i.e., constructive argumentative structure, Hypothesis IVa stated that also presenting unfamiliar issues would increase attitude change. This was the only attitude change hypothesis that was not supported. If all familiar issues were presented in the message, the addition of an unfamiliar issue did not further increase attitude change--when the message contained only source-consistent arguments. The two message types were equally persuasive and both were more persuasive than the constructive message that presented only some of the issues known to the receiver.

The prediction of Hypothesis V was opposite to that of IVa. Hypothesis V predicted that when antagonistic arguments were included as well as consistent arguments, i.e., rebuttal argumentative structure, attitude change would decrease if unfamiliar issues were also presented (in addition to all familiar issues). The hypothesis was supported.

The remaining hypotheses predicted the effect of the message variables on attitude change with the effect of credibility removed from attitude change. Hypotheses VI, VII and VIIa predicted that the removal of the effect of source credibility from attitude change would reduce the difference in attitude change between selected message

conditions. Since there was no relationship between message treatments and perceived source crebility, it was not statistically possible for Hypotheses VI, VII, and VIIa to be supported; therefore, they were not tested. Hypothesis VIII predicted that the removal of the effect of source credibility from attitude change would increase the difference in attitude change, again between selected message conditions. This hypothesis was tested but was not supported.

#### Discussion

With constructive argumentative structure, also presenting an unfamiliar issue did not elicit an attitude change increment above presenting only all familiar issues. Despite the lack of support for the credibility hypotheses, an attitude change increment was expected on the grounds that the more arguments presented which are consistent with the advocated position, the greater the persuasive impact of the message and the greater the attitude change.

It could be argued that the lack of support for this hypothesis is readily explainable for **messa**ges that were unfavorable to the topic. Introducing an unfamiliar issue, e.g., firestorm protection, and proceeding to argue that the present firestorm protection is inadequate could be expected to have little effect on attitude change, since the receiver was not even previously aware that <u>any</u> firestorm protection was in existence. However, when the message was favorable to the topic, this reasoning is not as compelling. Moreover, the evidence does not provide any support for this interpretation. The favorability of the message toward the topic did not have an effect on attitude change, i.e., the mean for the group that received the version favorable to the topic was not different from

the mean of the group that received the unfavorable version. An adequate interpretation of the failure of Hypothesis IVa is not apparent.

It would be unwise, however, to generalize this finding to messages where the ratio of unfamiliar to familiar issues presented is increased. In this study, ore unfamiliar and two familiar issues were presented. It is conceivable that if more unfamiliar issues had been presented, the hypothesis would have been supported. This is an empirical question and needs further research.

The predicted relationships between attitude change and relative issue familiarity were supported when the messages were of rebuttal argumentative structure. When the message took into account all familiar arguments antagonistic to the advocated position, maximum attitude change resulted. Failure to consider some of the antagonistic arguments known to the receiver, or considering more antagonistic arguments than those with which he was previously aware, significantly reduced the persuasiveness of the message. These results are interpreted in terms of the predicted difference in the negative effect of familiar and unfamiliar antagonistic arguments relative to the positive persuasive effect of the consistent arguments, all of which were unfamiliar. The lack of support for the credibility hypotheses is of minor relevance to this interpretation. Credibility was expected only to change the differences in attitude change resulting from the message treatments, not to eliminate the differences between them.

The general support for the attitude change hypotheses suggests that relative familiarity with message information has predictive utility and deserves further investigation. The present study, however, is of

limited generalizability. There is no assurance that the general hypotheses would have been supported had the ratios of "issues presented" to "issues known" been different, i.e., other than 1:2, 2:2 and 3:2. A number of other combinations should be tested before a great deal of confidence can be placed in the present findings.

In addition to varying the ratio, varying the absolute number of issues presented in the message might also produce differing results. The maximum number of issues presented in this study was three and it can be argued that this kept the messages relatively simple and comprehensible. The addition of more issues would have increased the complexity of the message and the amount of information required to be processed. Conceivably "number of issues" might produce different results if the range of arguments was less restricted.

This study also neglected the communication situation where a message takes into account unfamiliar issues as well as familiar issues but not all familiar issues. What are the attitudinal effects of neglecting some issues which are familiar to the receiver while at the same time including issues with which he was previously unfamiliar? Do the neglected issues take on greater or lesser significance for the receiver? Since the communicator is familiar with issues not previously known to the receiver, does the receiver assume that omitted issues are actually known to the communicator but are unimportant? These questions are important research that should be investigated.

The findings concerning familiar and unfamiliar antagonistic arguments presented in a message clearly suggest the predictive advantage of defining antagonistic arguments in terms of their prior familiarity

to the receiver. From the results obtained in this study, it is apparent that recommendations with respect to presenting antagonistic arguments (two-sided) or not presenting them (one-sided) must be dependent on the receiver's familiarity with the antagonistic arguments.

Hypothesis III predicted that rebuttal argumentative structure would elicit more attitude change than constructive structure, provided that none of the antagonistic arguments in rebuttal messages were previously unfamiliar to the receiver. Although the hypothesis was supported, the rationale from which the hypothesis was developed states that the difference in attitude change is a function of differences in the message induced credibility of the two sources. The differentially induced credibility was predicted to mediate differences in attitude change. Given the failure of the messages to differentially affect source credibility, the interpretation of the attitude change findings is obscured.

One possible explanation for the attitude change findings involves the notion of "rehearsal" advanced by Hovland and his associates. Presenting only arguments which are consistent with the advocated position may stimulate the receiver to "rehearse" his own position, thereby reducing his attention to the source's arguments. Since, in the present study, the receivers were opposed to the source's position and were familiar with arguments antagonistic to the source's position, the "rehearsal hypothesis" must be considered as a possible interpretation of these findings.

A second kind of interpretation is analogous to "associative facilitation" in learning theory. When two stimuli are presented in order and the first increases the extent to which the second is effectively learned,

this is termed "associative facilitation". In rebuttal argumentative structure the antagonistic argument is presented before the constructive argument and may clarify the constructive assertion to some extent, thereby increasing the persuasiveness of the rebuttal argument over the constructive argument.

A third interpretation involves a consideration of the source credibility measuring instrument. It is possible that source evaluations were differentially affected by the messages but that the instrument did not detect the differences. The scales used to measure the dimensions of credibility were chosen from a study which factor analyzed the ratings on known sources (Berlo, Lemert & Mertz, 1965). In the present study the communicator was not well known. The source was "known" only through the message. Everything about the various messages which could produce variability in source evaluations was held constant except for number and familiarity of issues, and whether or not antagonistic arguments were included. While the rating scales which were used for each dimension are capable of differentiating well known sources (e.g., John F. Kennedy, Mennen Williams, and Fidel Castro), they may not be sufficiently sensitive to differentiate between much more subtle clues. Perhaps the best example of this argument is the safety scale "kind-cruel". In retrospect, there is little reason to expect that the two message variables in the present study would significantly effect variability in source ratings on this scale.

However, this is an extreme example and the same explanation for the scale "fair-unfair", also used to measure the safety of the source, is much less tenable. Therefore, it seems unlikely that this consideration

is capable of accounting for the complete failure of the messages to differentiate source credibility. More likely, all or some combination of the above considerations produce the persuasive differences in the two agrumentative structures. Also, factors not yet considered may also have contributed to the differences. Further work could profitably be directed at investigating the functioning of opposing arguments in a persuasive message. At the present time there is inadequate data to choose between "receiver rehearsal" and "source or message perceptions" as alternative explanations for the data.

A resolution of this issue will require different design and measurement research strategies. Typically, attitude measures are taken prior to and immediately after message manipulations. Occasionally a delayed post test or post tests are incorporated in the research design. This design forces a consideration of complete messages rather than individual message elements as the unit of analysis. To determine the effect of specific message elements on any changes that occur, a methodology is required which permits the determination of these individual effects. This necessitates that a variety of measures be taken at appropriate intervals during the actual presentation of the message. Only by adopting such procedures will it be possible to isolate the extent to which such factors as "rehearsal", or "credibility" or other factors might be operating to produced any observed differences. It is the isolation of the effects of these individual factors that will lead to an understanding of the way in which argumentative structure operates.

Analytic schemes such as the one just proposed would be facilitated by specifying in advance the message variables assumed to be related to each theoretic consideration assumed to be relevant to the dependent variable. If "rehearsal" and "credibility" do mediate differences in attitude change, then it is necessary to specify the elements in the message with sufficient precision that their relationship to these factors can be predicted and adequately measured.

In the present study messages were precisely constructed in terms of constructive message segments. The smallest definable unit was the constructive message segment. The only guides that were used in developing these segments were (1) that only arguments and information consistent with one position be included, and (2) that the segments have equivalent effects on receiver attitudes. Additional rules for constructing types of segments for other topics need to be developed. These rules should produce equivalence in such things as semantic content, the nature of logical connections, etc.

Within these limitations, all but one of the attitude change findings are quite clear. If arguments that oppose the communicator's position are known to the receiver, it appears that they should be taken into account in a persuasive message. The study, however, did not provide an explanation for this phenomenon. Some tentative interpretations of the finding were proffered and suggestions for future research were made. If arguments that oppose the communicator's position are not familiar to the receiver, they probably should not be taken into account in a persuasive message. Previous research in the area of message "sidedness" has lead

to the conclusion that the "two-sided" communication is more effective than the "one-sided" when the receiver disagrees with the communicator's position. The findings of this study suggest that the generality of this traditional proposition be restricted to "two-sided" messages which include only familiar antagonistic arguments.

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# APPENDIX A: TEXTS OF THE CONSTRUCTIVE MESSAGE SEGMENTS (TIME-ONE AND TIME-TWO)

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#### FAVORABLE MESSAGES

It may be reasonably assumed that the probability of a thermonuclear attack on this country is extremely low. That the use of such weapons would leave no nation a clear winner is possibly the one thing upon which world leaders agree. However, as long as stockpiles of nuclear weapons exist and international tension remains relatively high, the probability of a nuclear attack is, unfortunately, not reduced to zero. A slight possibility, either by non-rational intent or accident remains. As long as any possibility of such an occurrence exists, the only responsible course of action available is to provide the nation with the necessary protective measures. It is within this frame of reference that the current civil defense program will be discussed.

It is, of course, impossible in a few paragraphs to do more than present an overview of the civil defense program. This brief analysis has merely attempted to point up the extensive nature of the current program.

#### UNFAVORABLE MESSAGES

It may be reasonably assumed that the probability of a thermonuclear attack on this country is extremely low. That the use of such weapons would leave no nation a clear winner is possibly the one thing upon which world leaders agree. However, as long as stockpiles of nuclear weapons exist and international tension remains relatively high, the probability of a nuclear attack is, unfortunately, not reduced to zero. A slight possibility, either by non-rational intent or accident remains. As long as any possibility of such an occurrence exists, the only responsible course of action available is to provide the nation with the necessary protective measures. It is within this frame of reference that some of the more obvious shortcomings of the current civil defense program will be discussed.

In conclusion, the evidence suggests that civil defense programs need to change their present emphasis. This is not meant to imply that civil defense measures be intensified, but only that they be altered to more closely reflect the realities of the situation for which they are intended. (Identification code - FALp)

(FALLOUT PROGRAM--FAVORABLE)

One of the major reasons underlying the effectiveness of the civil defense program is the emphasis placed on marking and stocking fallout shelters during the past six years. Without the protection this would provide, significantly more deaths would be caused by fallout than by any other potential nuclear hazard. The fallout shelter program would provide greater life saving potential per unit cost then would any other alternative program.

To date, 172,000 fallout shelters have been designated which would provide space for more than 150 million people. Seventy-nine thousand of these have already been stocked with non-perishable food, blankets, sanitation facilities, and emergency medical supplies. In addition, ventilation kits which will make it possible for people to stay inside shelters for two weeks or more, will soon be installed. Experts have reliably estimated that after two weeks, the radiation level will drop to one one-thousandth of its initial level, that is, within human tolerance.

In all, these measures would save from 15 to 30 million people who would not otherwise survive a major nuclear attack. Moreover, if an attack was not full scale, or if it was directed primarily at military installations, millions more lives would be saved by the civil defense shelter program.

Location of shelters is highly relevant to the numbers who would be saved. Predictions are that closer to 30 million could be adequately protected because the majority of shelters (seventy percent) are located in downtown areas of cities where the population is most dense and the need would be greatest. Proportionately fewer shelters have been constructed in rural areas that will suffer neither the blast force nor such intensive fallout danger.

(Identification code - FIRp)

#### (FIRESTORM PROGRAM--FAVORABLE)

While offering protection from the more obvious dangers in the event of a thermonuclear attack, the current civil defense program has also initiated a system of interrelated measures to deal with the lesser danger of firestorms. Considerable research has been conducted which indicates that firestorms, the fires that could follow a nuclear blast, would be limited to a radius of approximately only one mile from ground zero. Thus, best available estimates conclude that for the majority of the population, firestorms would, at worst, be only a secondary hazard.

Nevertheless, a number of precautionary measures have been taken in those areas where firestorms might be expected to occur. Programs now underway, for example, provide for reinforcing shelters in prime target areas with concrete as well as noncombustible siding and equipping shelters with oxygen units and air purification units. These programs are expected to be complete by 1970, less than three years from now. Although highly desirable, even these steps would not be absolutely necessary for many locations. The typical American city, with its wide streets and mainly concrete and brick buildings, does not supply sufficient quantities of highly combustible material to maintain large-scale destructive fires.

Further, it is estimated that only a small percentage of persons in the nation would be potentially affected by firestorms. For that <sup>Small</sup> percentage of the population in shelters where fires might occur, sufficient high purity oxygen in special containers designed for shelter use is already being produced. It is estimated that this oxygen could supply 200 times the number of persons who might be affected by firestorms. These calculations are based on the 1966 figures of the U. S. Department of Commerce which report that the annual production of oxygen amounts to 51 billion cubic feet, enough for a two week supply for one out of every 50 Americans. Thus, even though firestorms would present less of a hazard than would fallout, thorough precautionary measures are being taken to protect against the upper limits of its possible effects.

#### (Identification code - RECp)

#### (RECOVERY PROGRAM--FAVORABLE)

While providing protection from the more obvious dangers in the event of nuclear attack, civil defense is currently developing an extensive number of interlocking programs which would hasten the recovery of the nation. While initial shelter protection must remain the major function of civil defense, post attack measures are being developed to greatly reduce the hazards which would follow.

As an example of these measures, an enlarged medical treatment force would be provided for the increased numbers of people who would require medical attention. A large number of fatalities would be averted by this prompt medical treatment. The program would be operated by experienced physicians employing emergency facilities and would be augmented by auxiliary and paramedical personnel (nurses, dentists, pharmacists and veterinarians). This operation would continue until emergency treatment was no longer required. However, medical recovery, like the other types of post attack recovery, depends on adequate pre attack planning and preparation to support post attack activities. For this reason, civil defense is planning the program now so that it would be operational if an attack ever should occur.

The post attack medical treatment program is but one recovery program now being developed. Disease and pest control, food and water contamination control, emergency housing and exposure control as well as sanitation provisions are other similarly planned measures. In addition to preventing unnecessary fatalities, the correlated result of these preplanned measures would be to hasten the restructuring of our society.

(Identification code - FALc)

#### (FALLOUT PROGRAM--UNFAVORABLE)

The nation's civil defense program, with its almost total emphasis on fallout shelters as the major source of protection from a potential nuclear attack, is unjustifiable. While this danger should not be dismissed, it is a gross miscalculation to presume that fallout would represent the most danger to human life. When other hazards are considered, fallout would have to be ranked well down on the list, and fallout protection would have to be rated as having low life-saving potential on a per unit cost basis.

Despite civil defense's preoccupation with fallout, even in this area, the program falls considerably short of providing anything but a mere semblance of the minimum protection which would be required. As an example of this facade of protection, 70 per cent of all shelter space is located in the downtown areas of large cities where the danger from fallout does not in anyway compare with the danger from the initial blast. On the other hand, in suburban and outlying areas where fallout becomes a much greater problem, minimally protective shelter space is available for less than one in ten residents.

Not only is present shelter space inappropriately located, those shelters which are available are either unstocked or only tokenly stocked with food, blankets, medical and sanitation supplies. Moreover, measures for maintaining a crucial safe air supply have not been installed which, in itself, almost completely negates any potentially realistic usefulness the existing shelter system might afford. Radiation experts have estimated that adequate shelter space would be required for as long as three months after a thermonuclear attack, before radiation levels would be within human tolerance. It is fairly obvious that the existing civil defense program is a long way from being able to provide this minimal protection.

#### (Identification code - FIRc)

#### (FIRESTORM PROGRAM--UNFAVORABLE)

The current program focusing almost solely on fallout shelters, has neglected the major hazard of firestorms which would immediately follow a nuclear blast. Civil defense authorities seem to have dismissed what was known some twenty years ago about the firestorms created by even conventional bombs. During World War II firestorms almost leveled the European cities of Hamburg and Dresden after the allied forces attacked with conventional bombs. In Dresden, for instance, more than half of the 556,000 dwellings were destroyed, mostly by the firestorms which reached temperatures of 1800°F. In a single night 300,000 were killed by a "mere" 2,000 tons of explosives. A 20 megaton bomb, intermediate sized by today's standards, would deliver ten thousand times the tonnage Dresden received! Instead of rationalizing these historical facts, civil defense planners ought to be projecting this information into the future and asking what safeguards would be needed for a thermonuclear attack, if such an attack should ever occur.

It is estimated that in a city the size of Chicago hundreds of thousands would perish from the firestorm effects from a 20 megaton bomb if they sought protection in the shelters now provided by our civil defense system. Shelter occupants would be almost totally vulnerable to the heat, flame, carbon monoxide and lack of oxygen. Considering only the latter, firestorms consume the vital supply of free oxygen. Shelter occupants, without large quantities of emergency oxygen supplies, would suffocate, even if they managed to escape the heat and flame. Yet recent U. S. Department of Commerce figures (1966) indicate annual production of high purity oxygen, only a small proportion of which is in cylinders suitable for shelter use, amounts to only a few days' supply for less than 2 per cent of the population. Even if these supplies were installed in shelters, which they are not, they would be far from adequate. In short, the fallout shelter program, based upon a set of false assumptions, is a misleading justification for an unrealistic civil defense program.

(Identification code - RECc)

#### (RECOVERY PROGRAM--UNFAVORABLE)

However, the most indefensible defect in the civil defense program is its lack of concern for post attack measures. The present civil defense program virtually stops when survivors emerge from their shelters, two weeks after an attack. Although civil defense has had fifteen years to initiate and operationalize post attack recovery programs, none exist. It is impossible to calculate the number of "early" survivors who would die because of this oversight. However, the cost of human life would assuredly be high and the real tragedy is that these people would die needlessly.

As an example, visualize the vast numbers of initial survivors who will die because of the lack of necessary medical attention. This number would multiply simply because radiated persons are more susceptible to infection and disease. Add to these those who would be suffering from a multitude of other injuries resulting from the attack and the point becomes too obvious to labor. Yet, for all our 200 million people we have only 237,000 doctors to minister to them--now, under normal conditions. Of all registered doctors in Hiroshima when the "small" twentykiloton bomb fell, 80 per cent were immediate casualties, and unfit for service. Officials in that city attributed 35 per cent of the deaths which occurred in the first week to the fact that normal medical facilities were no longer available. No action has been taken by civil defense to program any measures to lessen the consequences of the patient/ Physician imbalance.

This is not an isolated example of civil defense's failure to develop a realistically balanced program. In the unimaginable chaos which would immediately follow an attack, it would be impossible to locate auxiliary skilled personnel to cope with a whole array of emergencies--unless organization and training had occurred <u>prior</u> to the emergency. No such training has been conducted by Civil Defense. If the situation would be so hopeless that post attack programs would be futile, civil "defense" should be exposed as a cruel myth. If this is not the case, no responsible civil defense program can afford to neglect this phase, when the real fight for survival would begin. There is no alternative to the development of these programs. They cannot be delayed any further simply because they lack the visible public display of fallout shelters and the comforting aura of protection these structures afford.

## APPENDIX B: TEXTS OF THE REBUTTAL MESSAGE SEGMENTS\*

\* Throughout this Appendix "refutational" is used interchangeably with "rebuttal."

#### Standard Introductory and Concluding Paragraphs

#### INTRODUCTION--ALL MESSAGES (TIME-TWO)

As long as the world situation remains in its present state of unrest, and as long as an increasing number of nations continue to develop and stockpile weapons of mass destruction, most people would agree that no nation can afford to take civil defense lightly. Certainly the chances of a nuclear attack are sufficiently remote that it would be unwise for every citizen to devote much time and energy dwelling on such a psychologically disturbing matter. If this were to happen the end result could be an undesirable national paranoia about nuclear war. On the other hand, however, it would be distressing for the average person to think that civil defense authorities had not developed programs to minimize the destructive effects of the "unthinkable" should it ever occur.

#### CONCLUSION--FAVORABLE MESSAGES (TIME-TWO)

It is, of course, impossible in a few paragraphs to do more than present an overview of the civil defense program. This brief analysis has merely attempted to point up the extensive nature of the current program.

#### CONCLUSION--UNFAVORABLE MESSAGES (TIME-TWO)

In conclusion, the evidence suggests that civil defense programs need to change their present emphasis. This is not meant to imply that civil defense measures be intensified, but only that they be altered to more closely reflect the realities of the situation for which they are intended.

#### (Identification code - FAL-FALp)

#### (FALLOUT PROGRAM -- REFUTATIONAL FAVORABLE)

The present civil defense program has come under attack from some quarters for concentrating its efforts on fallout protection. Critics of the program contend that, in the event of a nuclear attack, hazards other than fallout would represent the greatest dangers to human life, and that these hazards have been largely disregarded by civil defense officials. This criticism is, however, unwarranted. Without the protection fallout shelters would provide, significantly more deaths would result from fallout than from any other nuclear hazard. The fallout shelter program would provide greater lifesaving potential per unit cost than would any other alternative emphasis.

In keeping with this analysis, 172,000 fallout shelters have been designated which would provide space for more than 150 million people.

Seventy-nine thousand, or almost half, of these have been stocked with nonperishable food, blankets, sanitation facilities, and emergency medical supplies. In addition to these measures, civil defense officials realize that the lifesaving potential of shelters is greatly reduced because they are not presently equipped with air purification facilities. Consequently, ventilation kits which will make it possible for shelter occupants to remain inside for two weeks or more, will soon be installed. Admittedly, there is considerable controversy over the length of time survivors will have to remain in shelters after an attack. Expert opinion varies from two weeks to as long as three months. However, radiation, which would be the greatest danger to human life, drops off in two weeks to 1/1000 its initial level, that is, to within human tolerance.

In all, it is estimated that the existing fallout shelter system would save from 15 to 30 million people who would not otherwise survive a major nuclear attack. This is largely due to the fact that shelter space has been strategically located where the danger, and hence the necessary protection required, would be greatest. Nearly three-quarters of all shelter is in the downtown areas of metropolitan centers where the population is most concentrated and where attacks, if they came, would likely occur.

Critics of this allocation of shelter space have argued that the danger from fallout in the downtown areas of cities will be less critical than the hazard of the initial blast. The real danger from fallout, they contend, is in suburban areas where proportionately less shelter space is located. This position, is, of course, untenable. Not only is shelter space immediately available for approximately ten percent of all suburbanites, but the inescapable fact remains--the vast majority of Americans are concentrated within cities.

#### (Identification code - FIR-FIRp)

#### (FIRESTORM PROGRAM--REFUTATIONAL FAVORABLE)

While offering protection from the more obvious dangers in the event of a thermonuclear attack, the current civil defense program has also initiated a system of interrelated measures to deal with the lesser danger of firestorms.

The fires which would follow a nuclear blast would be intense at ground zero but extensive research has shown that the hazard of fire would be limited to a radius of one mile from this point. The widespread fires which followed the allied bombings of Hamburg and Dresden near the end of World War II resulted largely because most of the structures in these cities were of highly combustible materials which fed the initial flames. This, plus the fact that in these cities the streets were extremely narrow and fire conditions ideal, permitted 2,000 tons of nonnuclear explosives to extensively damage the cities and cause hundreds of thousands of deaths. This would not be the case in the U. S. where the streets of large cities are wide and the buildings constructed of steel, concrete and brick, despite the fact that a 20 megaton bomb has much greater explosive power than did the bombs used at Dresden and Hamburg.

While fire cannot be dismissed as a nuclear hazard, the estimate, by critics of the present civil defense program, that hundreds of thousands would perish if they were in existing shelters, is a great exaggeration. Most shelter occupants would not be vulnerable to firestorms or the hazards of carbon monoxide poisoning and insufficient oxygen which accompany fire. From the best available evidence, it can be concluded that for the majority of the population, firestorms would, at worst, be only a secondary hazard.

Nevertheless, a number of precautionary measures have been taken in those areas where firestorms might be expected to occur. Programs now underway, for example, provide for reinforcing shelters in prime target areas with concrete as well as noncombustible siding and equipping shelters with oxygen units and air purification units. These programs are expected to be complete by 1970, less than three years from now.

Furthermore, for that small percentage of the population in shelters where fires might occur, sufficient high purity oxygen in special containers designed for shelter use is already being produced. Although not presently located in shelters, these could be quickly transported if world tension were to significantly increase. It is estimated that this oxygen could supply 200 times the number of persons who might be affected by firestorms. These calculations are based on the 1966 figures of the U. S. Department of Commerce which reports that the annual production of oxygen amounts to 51 billion cubic feet, enough for a two week supply for one out of every 50 Americans. Thus, even though firestorms would present less of a hazard, than would fallout, thorough precautionary measures are being taken to protect against the upper limits of firestorms' possible effects.

(Identification code - REC-RECp)

## (RECOVERY PROGRAM--REFUTATIONAL FAVORABLE)

While shelter protection must remain the major function of civil defense, an extensive number of interlocking programs are currently being developed which would hasten the recovery of the nation. Civil defense has been sharply criticized in the past for placing the major emphasis on shelters at the expense of vital post attack programs. Critics of the program point to Hiroshima where a relatively small nuclear bomb immediately incapacitated most of the medical personnel. It is true that thousands died because medical facilities were unavailable and that results in this country, without a preplanned action program, would be similarly disastrous.

For this reason, a program is currently being planned which would provide for an enlarged medical treatment force for the increased number of people who would require medical attention. A large number of fatalities would be averted by this prompt medical treatment. The program would be operated by experienced physicians employing emergency facilities and would be augmented by auxiliary and paramedical personnel (nurses, dentists, pharmacists and veterinarians). This operation would continue until emergency treatment was no longer required.

The post attack medical treatment program is but one recovery program now being developed. Disease and pest control, food and water contamination control, emergency housing and exposure control as well as sanitation provisions are other similarly planned measures. In addition to preventing unnecessary fatalities, the correlated result of these preplanned measures would be to hasten the restructuring of our society.

#### (Identification code - FAL-FALc)

#### (FALLOUT PROGRAM--REFUTATIONAL UNFAVORABLE)

The nation's civil defense program, with its almost total emphasis on fallout shelters as the major source of protection from a potential nuclear attack, is unjustifiable. This emphasis is the result of the erroneous assumption that more deaths would be caused by fallout than any other potential nuclear hazard. This is a gross miscalculation. When other hazards are considered, fallout would have to be ranked well down on the list, and fallout protection would have to be rated as having low lifesaving potential on a per unit cost basis.

Despite civil defense's preoccupation with the fallout shelter program, even within this limited area, only a mere semblance of the minimum protection which would be required has been provided. Although 172,000 fallout shelters have been designated which could accommodate 150 million people, and, according to civil defense personnel, save up to 30 million who would otherwise die, these estimates are not only extremely misleading but also fallacious. Seventy percent of these "shelters" are in the downtown areas of major cities where, contrary to Civil Defense pronouncements, the danger from fallout is minimal when compared with the danger from the initial blast. Also, contrary to Civil Defense calculations, the concentration of people is not in the downtown areas but in the suburbs where the danger from fallout is potentially greatest. Paradoxically, shelter space for suburbanites is almost nonexistent. Calculated as a national average, shelter space has been provided for less than 10 per cent of this segment of the population.

In addition to the inappropriateness of shelter location, the illusion of safety becomes even clearer by considering the fact that more than half of these shelters have not been stocked with any emergency provisions. Such disaster necessities as nonperishable food, sanitation facilities, and medical supplies have been minimally distributed. But most important, no measures have been taken to ensure a crucial safe air supply in any shelters. Although civil defense authorities have been "considering" installing ventilation kits, this talk has continued for a number of years and no action has been taken. Without such equipment any realistic usefulness the existing shelter system might potentially afford, is completely negated.

Furthermore, experts in the field of radiation have estimated that adequate shelter facilities would be required from two weeks to three months depending upon a large number of interrelated factors. For some reason, civil defense personnel have elected to base the projections they have made on the two week figure. Despite the fact that most types of radiation drop to 1/1000 of their initial radiation level in this period, without any way of knowing what the initial radiation level might be, the magic number "two" weeks represents rather curious optimism. When all of these inadequacies are considered, it becomes exceedingly obvious that the existing civil defense program provides only mythical protection.

### (Identification code - FIR-FIRc)

#### (FIRESTORM PROGRAM -- REFUTATIONAL UNFAVORABLE)

The nation's civil defense program, focusing almost solely on fallout shelters, has largely neglected the major hazard of firestorms which would immediately follow a nuclear blast. On the assumption that firestorms would be limited to a radius of only one mile from ground zero, a trivial program for reinforcing a small fraction of shelters with concrete and noncombustible siding has been instituted by civil defense planners. These precautions, so minimal that they will take only a couple of years to complete, provide a clear indication of just how lightly this major hazard is being taken by some nuclear defense planners.

Civil defense authorities seem to have dismissed what was known some twenty years ago about the firestorms created by even conventional bombs. During World War II firestorms almost leveled the European cities of Hamburg and Dresden after the allied forces attacked with conventional bombs. In Dresden, for instance, more than half of the 556,000 dwellings were destroyed, mostly by the firestorms which reached temperatures of 1800° F. In a single night 300,000 people were killed by a "mere" 2,000 tons of explosives. Those who attempt to downgrade the importance of firestorms counter with the argument that U.S. cities, unlike Hamburg and Dresden, have wide streets and buildings built mainly of concrete and brick. For this reason, they contend, there would be insufficient quantities of combustible material to support widespread firestorms. This is, of course, absurd. A 20 megaton bomb, intermediate size by today's standards, would deliver ten thousand times the tonnage Dresden received! Instead of rationalizing these historical facts, civil defense planners ought to be projecting this information into the future and asking what safeguards would be needed for a thermonuclear attack, if such an attack should ever occur.

It is estimated that in a city the size of Chicago hundreds of thousands would perish from the firestorm effects of a 20 megaton bomb if they sought protection in the shelters now provided by our civil defense system. Shelter occupants would be almost totally vulnerable to the heat, flame, carbon monoxide and lack of oxygen. Considering only the latter, firestorms consume the vital supply of free oxygen. Shelter occupants, without large quantities of emergency oxygen supplies, would suffocate, even if they managed to escape the heat and flame. Yet, recent U. S. Department of Commerce figures (1966) indicate annual production of high purity oxygen, only a small proportion of which is in cylinders suitable for shelter use, amounts to only a few days' supply for less than 2 per cent of the population. Even if these supplies were installed in shelters, which they are not, they would, despite the claims of some, be far from adequate. In short, the fallout shelter program, based upon a set of false assumptions, is a misleading justification for an unrealistic civil defense program.

#### (Identification code - REC-RECc)

#### (RECOVERY PROGRAM--REFUTATIONAL UNFAVORABLE)

The most indefensible defect in the civil defense program is its lack of concern for postattack measures. The present civil defense program virtually stops when survivors emerge from their shelters, two weeks after an attack. It is impossible to calculate the number of "early" survivors who would die because of this oversight. However, the cost of human life would assuredly be high and the real tragedy is that these people would die needlessly.

As an example, visualize the vast numbers of initial survivors who will die because of the lack of necessary medical attention. This number would multiply simply because radiated persons are more susceptible to infection and disease. Add to these those who would be suffering from a multitude of other injuries resulting from the attack and the point becomes too obvious to labor. Yet, for all our 200 million people we have only 237,000 doctors to minister to them--now, under normal conditions. Of all registered doctors in Hiroshima when the "small" twentykiloton bomb fell, 80 per cent were immediate casualties and unfit for service. Officials in that city attributed 35 per cent of the deaths which occurred in the first week to the fact that normal medical facilities were no longer available. Civil defense officials have had more than twenty-five years to develop a postattack medical program but their output still amounts to nothing more than an "interesting set of hypotheses" about what might be done and about who might do it.

In the almost unimaginable chaos which would surely follow an attack, it would be impossible to locate auxilliary trained personnel to cope with the whole array of emergencies which would emerge--that is, unless organization and training had occurred prior to the emergency. Failure to preplan emergency medical facilities is not an isolated example of civil defense's attitude towards a balanced postattack program. These programs simply do not exist. Civil defense will argue that "measures are being planned" but these are paper programs. No action has been taken.

If the situation would be so hopeless that postattack programs would be futile, civil "defense" should be exposed as a cruel myth. If this is not the case, no responsible civil defense program can afford to neglect this phase, when the real fight for survival would begin. There is no alternative to the development of these programs. They cannot be delayed any further simply because they lack the visible public display of fallout shelters, with their comforting aura of Protection.

## APPENDIX C: THE TIME-ONE QUESTIONNAIRE

FOR RESEARCH PURPOSES ONLY

Communication Survey I-A

Please fill in the following:

Name:\_\_\_\_\_

Year in School:\_\_\_\_\_

Student Number:\_\_\_\_\_

Sex:

#### INTRODUCTION

This research study is one of a series concerned with the way college students react to various kinds of information on public issues. Please note that the information you provide will be held strictly confidential and will be used only for the purposes of this research project.

In this study we are interested in a number of kinds of information. We'll deal with them one at a time and give you the necessary instructions as we go along.

This study concerns a number of public issues on which various kinds of information have been made available by a variety of information sources. In this phase of the study we are asking you to read and make some types of evaluations of just one passage about one issue.

The passage starts on the next page of this booklet. Please read the passage carefully.

Please turn the page and begin. . .

It may be reasonably assumed that the probability of a thermonuclear attack on this country is extremely low. That the use of such weapons would leave no nation a clear winner is possibly the one thing upon which world leaders agree. However, as long as stockpiles of nuclear weapons exist and international tension remains relatively high, the probability of a nuclear attack is, unfortunately, not reduced to zero. A slight possibility, either by non-rational intent or accident remains. As long as any possibility of such an occurrence exists, the only responsible course of action available is to provide the nation with the necessary protective measures. It is within this frame of reference that some of the current civil defense program will be discussed.

One of the major reasons underlying the effectiveness of the civil defense program is the emphasis placed on marking and stocking fallout shelters during the past six years. Without the protection this would provide, significantly more deaths would be caused by fallout than by any other potential nuclear hazard. The fallout shelter program would provide greater life saving potential per unit cost than would any other alternative program.

To date, 172,000 fallout shelters have been designated which would provide space for more than 150 million people. Seventy-nine thousand of these have already been stocked with non-perishable food, blankets, sanitation facilities, and emergency medical supplies. In addition, ventilation kits which will make it possible for people to stay inside shelters for two weeks or more, will soon be installed. Experts have reliably estimated that after two weeks, the radiation level will drop to one one-thousandth of its initial level, that is, within human tolerance.

In all, these measures would save from 15 to 30 million people who would not otherwise survive a major nuclear attack. Moreover, if an attack was not full scale, or if it was directed primarily at military installation, millions more lives would be saved by the civil defense shelter program.

Location of shelters is highly relevant to the numbers who would be saved. Predictions are that closer to 30 million could be adequately protected because the majority of shelters (seventy percent) are located in downtown areas of cities where the population is most dense and the need would be greatest. Proportionately fewer shelters have been constructed in rural areas that will suffer neither the blast force nor such intensive fallout danger.

While offering protection from the more obvious dangers in the event of a thermonuclear attack, the current civil defense program has also initiated a system of interrelated measures to deal with the lesser danger of firestorms. Considerable research has been conducted which indicates that firestorms, the fires that could follow a nuclear blast, would be limited to a radius of approximately only one mile from ground zero. Thus, best available estimates conclude that for the majority of the population, firestorms would, at worst, be only a secondary hazard.

Nevertheless, a number of precautionary measures have been taken in those areas where firestorms might be expected to occur. Programs now underway, for example, provide for reinforcing shelters in prime target areas with concrete as well as noncombustible siding and equipping shelters with oxygen units and air purification units. These programs are expected to be complete by 1970, less than three years from now. Although highly desirable, even these steps would not be absolutely necessary for many locations. The typical American city, with its wide streets and mainly concrete and brick buildings, does not supply sufficient quantities of highly combustible material to maintain large-scale destructive fires.

Further, it is estimated that only a small percentage of persons in the nation would be potentially affected by firestorms. For that small percentage of the population in shelters where fires might occur, sufficient high purity oxygen in special containers designed for shelter use is already being produced. It is estimated that this oxygen could supply 200 times the number of persons who might be affected by firestorms. These calculations are based on the 1966 figures of the U. S. Department of Commerce which report that the annual production of oxygen amounts to 51 billion cubic feet, enough for a two week supply for one out of every 50 Americans. Thus, even though firestorms would present less of a hazard than would fallout, thorough precautionary measures are being taken to protect against the upper limits of its possible effects.

It is, of course, impossible in a few paragraphs to do more than present an overview of the civil defense program. This brief analysis has merely attempted to point up the extensive nature of the program.

\* \* \* \* \* \*

Now that you have finished reading, we'd like to get your evaluations of a number of aspects of this piece of writing and of the writer. On the following pages you will find a number of rating scales upon which to make your evaluations. These are 7-point scales of which the following is a sample:

Here is how the scales work. Suppose you were asked to rate the idea: "18 year old vote in Michigan." If, in your opinion, a voting age of 18 is a very good idea, you should put a check in the extreme left-hand position of the scale (in the space closest to the adjective "Good"). If, on the other hand, you feel a voting age of 18 is a <u>very bad</u> idea you should mark the extreme right-hand position (in the space closest to the adjective "Bad"). If you could not decide whether a voting age of 18 would be good or bad, or if your position of a voting age of 18 was neutral, then you should mark the center position on the scale. Please follow this procedure on <u>every scale</u> on the following pages. Mark each scale only once and do not skip any scales.

If you have any questions about how to mark the scales, please ask them now.

Okay, please turn the page and begin . . .

80

First of all, before you rate the passage, we would like your own evaluation of the issue "the current civil nuclear defense program." Please use the rating scales below to indicate your opinion.

## "The Current Civil Nuclear Defense Program"

worthless	:	:	:	:	:	:	: valuabl	.e
good	:_	:	:	:	:	:	: bad	
wise	:	:	_:_	:	<b>:</b>	:	_: f∞lish	1
honest	:	:	_:_	:	:	_:	: dishone	est
fair	:	:	:	:	:	:	: unfair	

On the basis of this one sample of the writer's work, what do you think this person would be like as a source of information?



In your opinion, would you say that the person who wrote this passage was <u>favorable</u> or <u>unfavorable</u> to the "current civil nuclear defense program."

favorable \_\_\_\_:\_\_:\_\_:\_\_\_:\_\_\_\_unfavorable

In general, would you say that the information provided in the passage was previously familiar or unfamiliar to you?

familiar \_\_\_\_:\_\_\_:\_\_\_\_:\_\_\_\_unfamiliar

Would you say that the writing was clear or unclear?

clear \_\_\_:\_\_:\_\_:\_\_\_:\_\_\_unclear

APPENDIX D: THE TIME-TWO QUESTIONNAIRE

Confidential - For Research Purposes Only



Communication Survey 2-C

Please fill in the following:

Name:\_\_\_\_\_Year in School:\_\_\_\_\_

Student Number:\_\_\_\_\_

Sex:

#### Introduction

During the past month, a large number of people took part in a pilot investigation conducted on campus. This investigation was concerned with the way various kinds of information was received. It also was concerned with the way in which these kinds of information affected the way the writer was subsequently perceived.

Information on four public issues was investigated. These were (1) Legislative Reapportionment, (2) The Office of Economic Opportunity, (3) The Civil Defense Program, and (4) Medicare. Of the four issues, the Civil Defense Program met the necessary research criteria for the present study.

In the present study we are concerned with a variety of kinds of information which have come from a number of sources interested in the topic. We would like you to read and make some evaluations of one of these passages.

It begins on the next page. Please begin.

Note: If you took part in the pilot study the general format of this questionnaire will be familiar. For the purposes of the present study, it does not matter if the issue was the same one presented to you in the pilot investigation. As long as the world situation remains in its present state of unrest, and as long as an increasing number of nations continue to develop and stockpile weapons of mass destruction, most people would agree that no nation can afford to take civil defense lightly. Certainly the chances of a nuclear attack are sufficiently remote that it would be unwise for every citizen to devote much time and energy dwelling on such a psychologically disturbing matter. If this were to happen the end result could be an undesirable national paranoia about nuclear war. On the other hand, however, it would be distressing for the average person to think that civil defense authorities had not developed programs to minimize the destructive effects of the "unthinkable" should it ever occur.

The nation's civil defense program, focussing almost solely on fallout shelters, has largely neglected the major hazard of firestorms which would immediately follow a nuclear blast. On the assumption that firestorms would be limited to a radius of only one mile from ground zero, a trivial program for reinforcing a small fraction of shelters with concrete and noncombustible siding has been instituted by civil defense planners. These precautions, so minimal that they will take only a couple of years to complete, provide a clear indication of just how lightly this major hazard is being taken by some nuclear defense planners.

Civil defense authorities seem to have dismissed what was known some twenty years ago about the firestorms created by even conventional bombs. During World War II firestorms almost leveled the European cities of Hamburg and Dresden after the allied forces attacked with conventional bombs. In Dresden, for instance, more than half of the 556,000 dwellings were destroyed, mostly by the firestorms which reached temperatures of 1800° F. In a single night 300,000 people were killed by a "mere" 2,000 tons of explosives. Those who attempt to downgrade the importance of firestorms counter with the argument that U.S. cities, unlike Hamburg and Dresden, have wide streets and buildings built mainly of concrete and brick. For this reason, they contend, there would be insufficient quantities of combustible material to support widespread firestorms. This is, of course, absurd. A 20 megaton bomb, intermediate size by today's standards, would deliver ten thousand times the tonnage Dresden received! Instead of rationalizing these historical facts, civil defense planners ought to be projecting this information into the future and asking what safeguards would be needed for a thermonuclear attack, if such an attack should ever occur.

It is estimated that in a city the size of Chicago hundreds of thousands would perish from the firestorm effects of a 20 megaton bomb if they sought protection in the shelters now provided by our civil defense system. Shelter occupants would be almost totally vulnerable to the heat, flame, carbon monoxide and lack of oxygen. Considering only the latter, firestorms consume the vital supply of free oxygen. Shelter occupants, without large quantities of emergency oxygen supplies, would suffocate, even if they managed to escape the heat and flame. Yet, recent U. S. Department of Commerce figures (1966) indicate annual production of high purity oxygen, only a small proportion of which is in cylinders suitable for shelter use, amounts to only a few days' supply for less than 2 per cent of the population. Even if these supplies were installed in shelters, which they are not, they would, despite the claims of some, be far from adequate. In short, the fallout shelter program, based upon a set of false assumptions, is a misleading justification for an unrealistic civil defense program.

In conclusion, the evidence suggests that civil defense programs need to change their present emphasis. This is not meant to imply that civil defense measures be intensified, but only that they be altered to more closely reflect the realities of the situation for which they are intended. Now that you have finished reading, we'd like to get your evaluation of a number of aspects of this piece of writing and of the writer. On the following pages you will find a number of rating scales upon which to make your evaluations. These are 7-point scales of which the following is a sample:

Good		:		: :	: :	: :		:		Bad
	VERY		QUITE	SLIGHTLY	NEUTRAL	SLIGHTLY	QUITE		VERY	-
					KNOW					
					or					
					NEUTRAI	J				

Here is how the scales work. Suppose you were asked to rate the idea "18 year old vote in Michigan." If, in your opinion, a voting age of 18 is a very good idea, you should put a check in the extreme left-hand position of the scale (in the space closest to the adjective "good"). If, on the other hand, you feel a voting age of 18 is a very bad idea you should mark the extreme right-hand position next to the adjective "bad."

If you could not decide whether a voting age of 18 would be good or bad, or if your position on the matter is neutral, then you should mark the center position on the scale. Please follow this procedure on every scale on the following pages.

Mark each scale only once and do not skip any scales.

Continue . . .

Before you rate the passage, we would like your own evaluation of "the current civil nuclear defense program." Please use the rating scales below to indicate your opinion.



### How would you rate the person who wrote this passage as a source of information on the issue "the current civil nuclear defense program"?



In your opinion, would you say that the person who wrote this passage was favorable or unfavorable to "the current civil defense program"?

favorable \_\_\_:\_\_:\_\_:\_\_:\_\_\_unfavorable

Would you say that the writing was clear or unclear?

clear \_\_\_\_:\_\_\_:\_\_\_\_unclear

Before you read the passage, how much of the information was previously unfamiliar to you i.e., how much of the information was novel? (check one)

- All of it
- Quite a bit of it
- \_\_\_\_ Some of it
- A little bit of it
- \_\_\_\_ None of it

APPENDIX E: BASIC EXPERIMENTAL DESIGN: INDICATING MESSAGE COUNTERBALANCING PROCEDURE AND DISPOSITION OF TIME-ONE AND TIME-TWO MESSAGES

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	tructure	ationship to dered at T <sub>l</sub>	e More	Lc Rc )	LC FALFALC CC FIRFIRC ) RECRECC	Rc	N=20 • cell N=20	(favorable- rebuttal)	(unfavorable- rebuttal)
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essage	R	<u>Struc</u> Progr	Fewer	FALFALC - <u>(n=3)</u> FIRFIRC (n=5)	FALFALC (n=3) FECRECC (n=2)		cell N=20	lout protectio estorm protect overy program	lout protectio estorm protect overy program
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				ת בתב	ense Program to the Curre ense Program	Favorable Favorable Civil Den		Key to syn FALp - fa FTRp - fin RECp - rec	FALc – fa. FIRc – fii RECc – rec

Table A: Disposition of Time-one and Time-two Messages

94

) Message	<u>al Structure</u> Relationship to	• Structural Relationship to • Programs Considered at T <sub>1</sub>	kelationsnip to msidered at T <sub>1</sub> Same More		FALFALP FIRFIRP	FALFALP FTRFTRP (n=7) (n=7)  FALFALP FALFALP FALFALP (n=8) FTRFTRp (n=20) FTRFTRn FTRFN				(n=5) r	cell N=20 ' cell N=20	(favorable- rebuttal)	(unfavorable- rebuttal)
	Rebutt		Fewer	FALFALP (n=3)		FALFALP		FIRFIRD (n=3)	RECRECP	r cell N=20 r	fallout protection firestorm protection recovery program	fallout protection firestorm protection ecovery program	
Time-tv			More			FALNETRA	RECP			cell N=20	FALFALP - 1 FIRFIRP - 1 RECRECP - 1	FALFALC - 1 FIRFIRC - 1 RECRECC- re	
	stive Structure Relationshin to	considered At T <sub>1</sub>	Same	· FALpFIRp	-1 (n=6)		- (n=7)	FIRPRECP	· (n=7)	r cell N=20 r	(favorable- constructive)	(unfavorable- constructive)	
	Construc	Programs (	Fewer	TRc ' FALp , (n=4)	(7) +		5) +	ECC (n=4)	18) 1 RECP 1 (n=3)	20 1 cell N=20	: protection rm protection y program	: protection mm protection y program	
				FALCF	ניים) ד	eges Serain FALC 1	inse Mess	i ne-ori bjefe f f f f f f f f f f f f f f f f f f	rvio rvio rvio	T=N	Key to symbols FALp - fallout FIRp - firestc RECp - recover	FALc - fallout FIRc - firestc RECc - recover	

Table A--Continued
