ONE-SIDED VS. TWO-SIDED MESSAGES: AN EXPERIMENT IN COUNTERCONDITIONING

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ABSTRACT

ONE-SIDED VS. TWO-SIDED MESSAGES:

AN EXPERIMENT IN COUNTERCONDITIONING

Delmer M. Hilyard

This study developed from an assumption that the effects of one-sided and two-sided messages on receivers' attitudes are analogous to the effects of total and partial reinforcement in learning experimentation. The conditioning/counterconditioning hypothesis of Mowrer's two-factor learning theory was used to develop the rationale.

A major assumption of the study was that each sentence within a persuasive message was the equivalent of a learning trial in the classical conditioning paradigm and would either condition (positively reinforce) or countercondition (negatively reinforce) a subject's pre-experimental response toward the message topic. Favoring (Pro), neutral and opposing (Con) statements, regarding the desirability of revising existing abortion laws, were prepared and arranged into eight different combinations analogous to eight different reinforcement schedules. Neutral statements were assumed to be message equivalents of non-reinforcement conditions in learning research. The following message conditions were used to test the analogy:

1. 100% Pro (34 Statements)
2. 100% Pro (17 Statements)
3. 50% Pro/50% Neutral (34 Statements)
4. 50% Pro/50% Con (34 Statements)
5. 100% Neutral (17 Statements)
6. 50% Con/50% Neutral (34 State.)
7. 100% Con (17 Statements)
8. 100% Con (34 Statements)

On the basis of pretest attitude scores subjects were assigned to Neutral, Con, or Pro subjects experimental treatments. 128 subjects in each experimental treatment were then randomly assigned and equally apportioned among the eight message conditions.

One-sided vs. two-sided message effects were tested for both "learning," measured by the amount of pretest to immediate posttest change in attitude, and "extinction," measured by the amount of immediate posttest to delayed posttest regression. Each attitude measurement was based on summated scores of responses to six semantic differential scales.

Neutral subjects in the one-sided, 100% Pro (17 Statements) message condition showed a significantly greater amount of attitude change than did Neutral subjects in the two-sided, 50% Pro/50% Con message condition. Both experimental groups differed significantly from a Control group receiving the 100% Neutral statements message. Neutral subjects in the one-sided message condition also showed a significant amount of "regression." Neutral subjects in the two-sided message condition did not regress significantly. These findings supported the two major hypotheses that a total reinforcement message would result in a greater amount of attitude change and a greater amount of regression than a partial reinforcement message. Relevant data from Con and from Pro subjects experimental treatments were generally consistent with the hypotheses but failed to reach the required .05 level for statistical support.

Another hypothesis, that the amount of attitude change observed increases with the amount of change advocated, was generally supported by the data for Con and for Pro subjects. There were no significant regression effects for any of the 34 statements message conditions.

Attitude change and regression hypotheses comparing partial reinforcement with total reinforcement, when partial reinforcement was defined by either the 50% Pro/50% Neutral or the 50% Con/50% Neutral message conditions were generally supported by the trends of the data. However, none of the comparisons reached statistically significant levels.

Subjects' responses to the messages' informational content were measured by a multiple choice recall test. All message conditions for the three experimental treatments showed significant learning and extinction effects. There was no correlation between attitude change scores and information recall test scores.

The findings of the study, while not providing conclusive support in all instances, generally imply that the analogy between learning and attitude research is useful. Additional tests of attitude change and resistance to extinction using the adapted conditioning paradigms are suggested.

ONE-SIDED VS. TWO-SIDED MESSAGES:

AN EXPERIMENT IN COUNTERCONDITIONING

By

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CHAPTER I

RATIONALE AND HYPOTHESES

Introduction

Communication research has frequently relied on theories of learning for the development of hypotheses and possible explanations of communication events. Similarly, this study developed from an assumption that the effects of one-sided and two-sided messages on receivers' attitudes are analogous to the effects of total and partial reinforcement on the learning of overt responses. Thus, the rationale presented in this chapter equates hypotheses concerning message variables and attitude change with the general findings from studies of reinforcement effects on learning.

Rationale

Attitudes and Learning--The attitude concept has consistently served an integrative function in social science research. Hollander and Hunt note that

> The attractiveness of the attitude concept is readily understood. It serves as a simple, manageable representation of something quite complex: A brief summary of what has gone before in the individual's experience that may affect his present behavior. (Italics mine) (12)

Katz has stated that modifying an old attitude or replacing it with a new one involves a process of learning. He conceptualizes attitude as the predisposition of the individual to evaluate some symbol or object or aspect of his world in a favorable or unfavorable manner. (18) Osgood, Suci, and Tannenbaum similarly state that

> Most authorities are agreed that attitudes are learned and implicit. Further, they are predispositions to respond, but are distinguished from other such states of readiness in that they predispose toward an evaluative response. Thus, attitudes are referred to as 'tendencies of approach or avoidance,' or as 'favorable or unfavorable,' and so on. (30)

Thus, given a general agreement that attitudes are learned and implicit, then the explicit behavior from which an attitude is inferred should presumably conform to generalizations about behavior derived from studies of learning.

Learning, Reinforcement, and the One-Sided/Two-Sided Message Issue -- Two generalizations which have been consistently supported by animal studies (e.g., 9, 17) and additionally supported by studies using children as subjects (4) have been simply stated by Berelson and Steiner:

> The course and strength of conditioning is systematically related to the quantitative relationship between reinforcer and response (the 'reinforcement schedule'). (1) A 100% schedule is usually the quickest way to establish new behavior or to increase the frequency of a response; that is, learning proceeds most rapidly when every correct response is reinforced. But by the same token: (2) Responses learned on such a schedule also extinguish most rapidly. (2)

Although messages apparently were not prepared according to any type of 'reinforcement schedule' criteria, previous one-sided/two-sided message research appears to be analogously related. A one-sided message might be considered a 100% reinforcement schedule; a two-sided message might be viewed as partial reinforcement.

In the first study to employ the one-sided/two-sided message variable, Hovland, Lumsdaine, and Sheffield presented experimental messages to soldiers regarding the proposition that the war with Japan would be a long one. The two-sided message contained non-refuted con arguments as well as pro arguments as well as pro arguments supporting

the proposition. The one-sided message contained the same pro arguments, but the non-refuted con arguments were deleted. Among men initially favorable to the proposition that it would be a long war, the one-sided message resulted in a greater percentage of individuals changing in the direction advocated. (15)

Two later studies have also indicated that one-sided messages for initially favorable subjects result in greater change in the direction advocated when such change is based on pretest-immediate posttest differences. (23, 24) Other studies incorporating the one-sided/two-sided message variable have produced inclusive results. (22, 31, 39, 40)

Although the analogy between attitude change and learning research is supported by the above studies, the parallelism is weakened by an apparent discrepancy between counterargument in persuasion and non-reinforcement in learning. This discrepancy is possibly most evident in extinction studies in the two research areas.

In one-sided/two-sided message research, the extinguishing of an attitude or opinion has been based on a counterargument presented sometime after the message of advocation has been presented and a posttest measurement of subjects' responses to the advocacy have been made. In learning research, extinction studies have typically compared one group which first learned on a total reinforcement schedule with other groups which first learned on partial reinforcement schedules (i.e., some criterial responses were not reinforced). All groups then received no reinforcements for any response during the extinction phase of the study.

The counterargument in persuasion research does not seem to be an analogical equivalent of the non-reinforcement conditions of learning

research. Instead, it seems to be the substitution of an opposing reinforcement, i.e., a punishment. However, if this disparity is disregarded, message research findings are consistent with reinforcement generalizations. Several studies have reported two-sided messages (i.e., partial reinforcement) as having been more effective against later counterargument than were one-sided messages. (22; 23; 24)

Two factors have been incorporated into the rationale in order to establish analogical consistency. First, it has been assumed that a part of a message that is neutral, i.e., that neither favors or opposes the proposition, is analogous to a non-reinforcement condition in learning experimentation. Second, the mediational theory of learning, as presented in the writings of Osgood and Mowrer, has been used to account for the relationships between positive reinforcement, non-reinforcement, and negative reinforcement.

Both Osgood and Mowrer offer relatively well explicated relationships between learning, reinforcement, and attitude change. As noted in the next section, some evidence of such relationships has already been established at a relatively simple level. Potential integration of attitude research and learning research requires the application and testing of mediational theory to the more complex relationships of message variables and attitude change.

Attitude Development and Mediational Theory -- A central assumption of Mowrer's and Osgood's theories is that covert (i.e., mediational) responses are conditioned to stimuli, including verbal stimuli. Osgood states,

> A very large proportion of the verbal signs used in communication are what we have termed assigns -- their meaning

> is literally 'assigned' to them via association, not with the objects represented but with other signs. . . (P)reviously established signs (or assigns) elicit certain meaningful reactions, and since the new assign is temporally contiguous with these reactions, it also becomes conditioned to them. (28)

Mowrer proposes that a sign or assign is placed in temporal contiguity with another sign or assign when the two are linked as subject and predicate; i.e., a sentence functions as a conditioning device. Thus, in his illustrative sentence, "Tom is a thief," the respondent's previously established, mediational, evaluative reponse to the verbal stimulus thief becomes conditioned to the temporally contiguous verbal stimulus Tom (27).

Staats, Staats, and Heard have summarized the verbal conditioning process proposed by Osgood and Mowrer through use of classical conditioning paradigms as illustrated in Figure 1.

Two experiments (35; 37) have demonstrated that attitude (i.e., responses to semantic differential scales) can be acquired through classical conditioning and in accordance with predicted differences based on learning reinforcement schedules. Other studies of evaluative reactions to verbal stimuli also indirectly indicate that the conditioning paradigm is useful in accounting for verbal stimulus-attitudinal response relationships. (6; 7; 8)

One implication of the verbal conditioning paradigm is that a proposition (a statement or sentence) is conditionable to another proposition, or, at least, to the 'detachable component(s)' common to a series of propositions. In other words, the likelihood of a response to

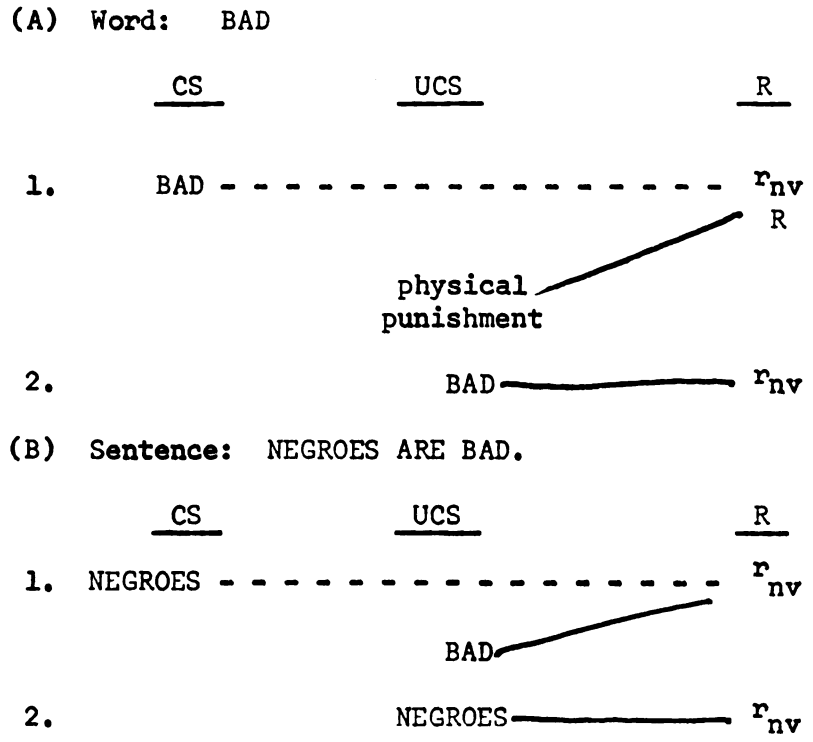

Fig. 1 -- The diagram depicts first-order conditioning of word meaning. After a number of pairings of BAD, the CS, with punishment, the UCS, BAD comes to elicit the conditionable (i,e., "detachable") components of the responses elicited by the punishment (symbolized as r_{nv} because of the negative value). The components of the total response which are not stably conditioned are symbolized as R. Diagram B depicts higher-order conditioning of meaning. The negative meaning responses now elicited by BAD are conditioned to NEGROES through contiguous pairing of the two words in the sentence. (37)

a proposition may be assumed to increase or decrease (to be positively or negatively reinforced) by placing that proposition in temporal contiguity with other propositions. Within the perspective of mediational theory, such conditioning arrangements appear to be central to the persuasion process.

If the conditioned stimulus is considered to be a Summary Evaluative Proposition (e.g., "X is good."), which delineates an intended common component of the temporally contiguous, accompanying arguments, a persuasive message may be viewed as a particular combination of reinforcers (unconditioned stimuli) for a response to that S.E.P. Figure 2 illustrates such a paradigm for a one-sided message.

CS		UCS	R
1.	X is good.	- - - - - - - - - - - - - - - - - - - -	(
			(
	Trial 1.	X makes us rich._____	(r_{p_1} & (R)
	Trial 2.	X promotes peace._____	(r_{p_2} & (R)
			(.
			(.
			(.
	Trial N.	X saves lives._____	(r_{p_n} & (R)
		X is good._____	r_p

Fig. 2 -- Conditioning paradigm for a one-sided message. The conditionable component of each total response to each learning trial is symbolized as r_p to indicate a positive value relative to the CS. The components of each total response which are not stably conditioned are symbolized as R.

CS		UCS	R
1. X is good.			(
	Trial 1.	X makes us rich.	(r_{p_1} & (R)
	Trial 2.	X requires effort.	(r_{q_1} & (R)
	Trial 3.	X promotes peace.	(r_{p_2} & (R)
	Trial 4.	X is a tedious process.	(r_{q_2} & (R)
	.		(.
	.		(.
	.		(.
	Trial N.	X saves lives.	(r_{p_n} & (R)
2.		X is good.	r_{p-q}

Fig. 3 -- Conditioning paradigm for a two-sided message. The conditionable component of each total response to each learning trial is symbolized as r_p to indicate a positive value or r_q to symbolize a negative value relative to the C.S. The components of each total response which are not stably conditioned are symbolized as R.

The diagram for a two-sided message differs in that the conditionable response components are indicated by another symbol (r_q) with a resulting change in the conditioned response value to r_{p-q} (See Fig. 3) Such paradigms of statements as conditioned and unconditioned stimuli are basic to the operationalization of persuasive messages as reinforcement schedules.

Reinforcement and Extinction as Conditioning and Counterconditioning -- Although there is disagreement about the relationships among rewards, punishments, and non-reinforcements (11), mediational theory assumes that evaluative responses to the three stimulus conditions are ordered along one dimension. Mowrer, for example, assumes a learning 'scale' extending

from +1.0 (reward; strong hope) through 0.0 (neutrality; indifference) to -1.0 (punishment; strong fear). Non-reinforcement, within his theory, is functionally equivalent to mild punishment or mild reward; (i.e., its 'scale' value is at some point near 0.0, but does have negative or positive value). (26)

Another of his major assumptions is that all learning involves conditioning principles and all unlearning, i.e., extinction or forgetting, involves counterconditioning. Thus, reinforcers, as unconditioned stimuli, are either conditioners or counterconditioners. Whether a specific reinforcer is a conditioner or counterconditioner is, of course, relative to a respondent's prior schedule of reinforcements. Within this arrangement a non-reinforcement is a 'mild' counterconditioner.

In terms of the conditioning/counterconditioning continuum, attitude studies may be viewed in this way:

1. Pretest: Measurement of extra-experimental pre- conditioning/counterconditioning effects.

2. Message treatment and immediate posttest: Measurement of experimental conditioning effects. For example,

   a. 100% Conditioning Schedule. (One-sided message)
   b. Conditioning plus some counterconditioning. (Two-sided message)

3. Delayed posttest: Measurement of message effects confounded with non-message (typically extra-experimental) conditioning/counterconditioning effects.

4. Counterargument and immediate posttest: Measurement of experimental counterconditioning effects.

The conditioning/counterconditioning continuum thus appears sufficient to render differences in resistance to negatively reinforcing counterargument of one-sided vs. two-sided messages analogous to the extinction

process in learning research. Extinction, however, also refers to the weakening process generally, i.e., across time and outside the laboratory. Through its assumptions concerning extra-experimental non-reinforcement, general interference theory, which attempts to account for the generalized extinction process, provides a means for supporting the attitude/learning analogy. By accepting these assumptions, attitudinal resistance to extinction may be tested by a non-reinforcing, rather than a negatively reinforcing, condition.

Extinction and General Interference Theory -- The most useful illustration of extra-experimental extinction (forgetting) is provided in a paper regarding verbal learning presented by Postman. He states,

> The assumed process of interference may be represented most conveniently in terms of the A-B, A-C paradigm, where A is a stimulus term in the experimental list, B is a response associated with A through linguistic usage, and C is the response to A prescribed in the experiment. Acquisition of the prescribed association requires the unlearning of extinction of the pre-experimental association, A-B, and its replacement by A-C. The evidence reviewed earlier makes it reasonable to assume that the extinguished habit, A-B, will gradually recover as a function of time and complete with A-C, at the time of recall. If A-B is a stable language habit, its pre-experimental strength was undoubtedly much greater than that imparted to A-C during the experiment. Thus, A-B will readily recover sufficient strength to compete effectively with A-C. Of course, if A-B is practiced after the end of the experiment, the process of recovery is speeded up and the probability of effective competition is increased. (33)

On the basis of these statements the analogy of attitude change with learning generalizations can be strengthened thus: A subject's pre-experimental attitude is equivalent to A-B, "stable language habit," in the interference paradigm. Given that a persuasive message is intended to produce a different association, i.e., A-C, a later counterargument would

be analogous to A-B practice after A-C learning, and a similar return to the pre-experimental "stable language habit" (the pretest attitude) could be expected across time without counterargument, i.e., under conditions of non-reinforcement.

The Problem of Attitude Stability -- there has been no consistency in prior research, however, to indicate whether or not attitudes do or do not regress to a pre-experimental level. A study by Hovland, Lumsdaine, and Sheffield (15) indicated that opinion change effects in some instances increased with the passage of time, the "sleeper" effect. The "sleeper" effect was accounted for by the source credibility variable. Other studies have shown maximum regression of attitudes to pre-experimental levels (5), while still other studies have found little change from posttest measurements to delayed posttest measurements made as long as one and one-half years later. (32) The obvious conclusion to be derived is that unknown and thus uncontrolled variables were contributing to the stability or instability of the attitudes measured.

Attitude stability from pretest to measurement after presentation of a persuasive message has also been studied, principally in regard to the relationship between the amount of change advocated and the amount of change produced. Inasmuch as Mowrer proposes that partial reinforcement does not produce as much "hope" as total reinforcement (i.e., different degrees of change are advocated), such studies are relevant to analogizing attitude research with learning theory.

The findings of Hovland and Pritzker (13) support the hypothesis that degree of change is directly related to the degree of difference between source and receiver positions -- under laboratory conditions. Similar findings, under conditions of high source credibility (but not with low credible sources), have also been reported. (1; 3; 10; 41)

On the other hand, field or "naturalistic" studies of attitudes (14; 19; 20; 34) indicate that the greater the source-receiver difference the less the degree of change. Some of the laboratory studies above also found rejection of discrepant messages under conditions of low source credibility. (1; 3)

Sherif, Sherif, and Nebergall attribute the field study-laboratory differences to four variables:

1. The degree of stimulus (attitude topic) specificity; degree of restriction on alternative modes of response or interpretation.

2. The range of stimulus values used in a study relative to the range of possible stimulus values; i.e., source-receiver discrepancies may or may not be maximal.

3. Source credibility, including reference group affiliations of source and receiver.

4. The degree of receiver (subject) familiarity and/or involvement with the issue. (34)

Although all four variables are relevant to research control procedures and consequent generalization of findings, the familiarity variable, in particular, indicates that field study-laboratory differences result, in part, from differences in the pre-experimental stability of attitudes. Some confusion concerning the measurement of attitudes has

consequently developed in attempting to relate the stability variable to attitude scales.

Conditioning, Counterconditioning, and Stability -- In survey studies, extreme attitude scale positions denote relatively greater resistance to change (stability) than do more neutral positions. This would appear to be, on first impression, the assumption underlying the use of semantic differential scales in attitude studies, for Osgood, Suci, and Tannenbaum state that intensity (habit strength) is equated with distance from the neutral origin of a scale. (30) However, at least one study has indicated that neutral scale positions may be more resistant to change than extreme positions. (38) Osgood and Tannenbaum consequently attempted to deal with the attitude stability dimension by incorporating an incredulity correction into the attitude congruity model. (29)

In terms of Mowrer's counterconditioning hypothesis, the assumption is that extreme marking on the "hope-fear" scale indicates only that conditioning has been on a total or nearly total schedule. Thus, the pattern of conditioning (the ratios of positive reinforcements, non-reinforcements, and negative reinforcements to total number of trials) is indicated by scale position, but the amount of conditioning (the total number of conditioning trials) is not.

The amount of conditioning (e.g., the number of statements in a message) is a relevant dimension of stability. Staats and Staats, generalizing from learning studies, have stated that resistance to extinction also is affected by the extent of conditioning. A response that has been established in many respondent conditioning trials will continue

to be elicited for many trials when the CS is presented alone. (36)

The two dimensions, amount and pattern of conditioning, are taken into account in Osgood, Suci, and Tannenbaum's theory of the congruity-learning process:

> Each time two signs are related in an assertion, the intensity (i.e., the pattern of prior conditioning) of the mediating reaction characteristic of each in isolation is shifted toward that characteristic of each in interaction, by a constant fraction of the difference in intensity. Since the difference in intensity decreases with each "trial," this means that the reactions characteristic of both signs must approach a point of common intensity . . . according to a negatively accelerated function. In other words, this generates a typical learning curve.[1] (30)

Thus, attitude change or resistance to change is assumed to be dependent upon the point at which an experiment "intersects" a subject's "learning curve," the number of experimental conditioning/counterconditioning trials, and the degree of difference between pre-experimental conditioning/counterconditioning and the conditioning/counterconditioning schedule of the experiment. Measurement by attitude scale is assumed to summarize the pattern of conditioning/counterconditioning, but it is assumed to provide no summary of the amount of conditioning/counterconditioning. In terms of Postman's interference, A-B/A-C, paradigm, A-B specification is not achieved, although Postman considers such specification necessary to account for unlearning. (33)

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[1]Congruity-learning may be "fitted" to the CS-UCS paradigm: The point of common intensity of two interacting signs may be at any point along the continuum, or dimension. If one of the signs has been previously conditioned to a level of 'high' stability, it becomes, essentially, an unconditioned stimulus when paired with an unstable sign. Pairing a stable sign with an unstable sign will thus show maximal shift of the response to the unstable sign toward congruity with the response to the stable sign, and minimal shift (zero measurement) of the response to the stable sign toward the response to the unstable sign.

Prediction of Message Treatment and Extinction Effects -- As a summary of the rationale to this point, message treatment and extinction (regression) effects have been assumed to be relative to the interaction of the following five variables (among others not included within the rationale):

A. Message type -- the pattern or ratio of conditioning/counterconditioning statements.

B. Message amount -- the length of the message; the number of statements or conditioning/counterconditioning trials.

C. Subject's pretest attitude -- the pattern of the subject's preexperimental conditioning/counterconditioning schedule as summarized by attitude scale measurement.

D. Subject's pretest attitude stability -- the unspecified number of pre-experimental conditioning/counterconditioning trials.

E. Time of measurement -- particularly the time lapse between posttest and delayed posttest when A-B language habits are assumed to interfere with message-induced A-C effects.

Several difficulties, resulting from interaction of the five variables, restrict the ability to predict specific message and time effects. In terms of the postulated variables, relative to measurement precision, these difficulties include:

1. The more stable the pretest attitude (D), the less the effect of the message (A and B).

2. The less stable the pretest attitude (D), the less the effect of regression (A, C and E).

Therefore, as the probability of getting significant message effects increases, the probability of getting significant regression effects decreases.

3. Two subjects may differ in both the pattern (C) and stability (D) dimensions.

With the (D) variable unspecifiable, relative effects of a given message on each of two subjects who differ in their attitude scale responses cannot be predicted. For example, a 'neutral' subject may change more than an 'extremely opposed' subject after presentation of a one-sided message favoring a topic because the 'neutral' subject is less stable, even though he is closer to message type (A) -- less change advocated -- than is the 'extremely opposed' subject.

One additional factor should be noted. In studies of reinforcement effects on learning, reinforcement trials have frequently been held constant for both a 100% reinforcement group and a 50% reinforcement/50% non-reinforcement group. As a result, the 50% reinforcement group experiences twice the number of trials of the 100% reinforcement group (e.g., Staats, Staats and Heard's study, above). Extinction or regression differences should be most apparent on this arrangement of the (A) and (B) variables.

Hypotheses

The major purpose of the study was to test the analogy of one-sided/two-sided message research as learning research. Therefore, four hypotheses may be specifically and directly related to these two types of messages:

1. Total reinforcement (one-sided message) will result in a greater amount of attitude change than will partial reinforcement (two-sided message), if

   (a) total reinforcement is defined by a message of either $\underline{x}$ number of positively reinforcing (conditioning) or $\underline{x}$ number of negatively reinforcing (counterconditioning) statements.

   (b) partial reinforcement is defined by a message of $\underline{x}$ number of positively reinforcing (conditioning) statements combined with $\underline{x}$ number of negatively reinforcing (counterconditioning) statements, and

(c) change is measured by pretest-immediate posttest ($Posttest_1$) differences.

2. Total reinforcement (one-sided message) will result in a greater amount of attitude regression than will partial reinforcement (two-sided message), if

   (a) total reinforcement is defined as in Hypothesis 1 above.

   (b) partial reinforcement is defined as in Hypothesis 1 above, and

   (c) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

3. The greater the number of learning trials, the greater the amount of attitude change, if

   (a) the number of learning trials is defined by the number of statements in a total reinforcement (one-sided) message, and

   (b) attitude change is measured by pretest-immediate posttest ($Posttest_1$) differences.

4. The greater the number of learning trials, the less the amount of attitude regression, if

   (a) the number of learning trials is defined by the number of statements in a total reinforcement (one-sided) message, and

   (b) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

Development of the analogy suggested the inclusion of messages combining non-reinforcing (neutral) statements with reinforcing ones, in addition to the one-sided and the two-sided messages. Therefore, the two following hypotheses were also tested.

5. Total reinforcement will result in a greater amount of attitude change than will partial reinforcement, if

   (a) total reinforcement is defined as in Hypothesis 1 above

   (b) partial reinforcement is defined by a message of $\underline{x}$ number of non-reinforcing (neutral) statements combined with either $\underline{x}$ number of positively reinforcing (conditioning) or $\underline{x}$ number of negatively reinforcing (countercon-ditioning) statements, and

(c) change is measured by pretest--immediate posttest ($Posttest_1$) differences.

6. Total reinforcement will result in a greater amount of attitude regression than will partial reinforcement, if

   (a) total reinforcement is defined as in Hypothesis 1 above,

   (b) partial reinforcement is defined as in Hypothesis 5 above, and

   (c) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

In accordance with conditioning/counterconditioning theory as developed in this rationale, the above six hypotheses are assumed to be subsets of the following, more general hypotheses:

7. The greater the difference between a subject's pretest attitude and the amount of change advocated by a message, the greater the amount of attitude change, if

   (a) the amount of change advocated by a message is defined by the ratios of positively reinforcing, non-reinforcing, and negatively reinforcing statements to the total number of statements,

   (b) the total number of statements, is held constant for all messages, and,

   (c) change is measured by pretest--immediate posttest ($Posttest_1$) differences.

8. The greater the difference between a subject's pretest attitude and the amount of change advocated by a message, the greater the amount of attitude regression, if

   (a) the amount of change advocated by a message is defined as in Hypothesis 7 above,

   (b) the total number of statements is held constant for all messages, and

   (c) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

9. The greater the difference between a subject's pretest attitude and the amount of change advocated by a message, the greater the amount of attitude change, if

   (a) the amount of change advocated by a message is defined by both the total number of statements and the ratios of positively reinforcing, non-reinforcing, and negatively reinforcing statements to the total statements,

   (b) the amount of change advocated by a message is assumed to increase with an increase in the total number of statements while the ratios are held constant, and

   (c) change is measured by pretest--immediate posttest ($Posttest_1$) differences.

10. The greater the difference between a subject's pretest attitude and the amount of change advocated by a message, the greater the amount of attitude regression, if

   (a) the amount of change advocated by a message is defined as in Hypothesis 9 above,

   (b) the amount of extinction is assumed to decrease with an increase in the total number of statements, and

   (c) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

CHAPTER II

METHOD

Subjects

Subjects were undergraduate students enrolled in an introductory psychology course at Michigan State University during one of the three academic terms in which the experiment was conducted. Qualification as a subject required that the student volunteer to participate and that he be in attendance during the three unannounced times that the pretest, the posttest, and the delayed posttest were administered. From 25 to 40 percent of the students who took the pretest in one of the terms were absent during one or both of the later experimental sessions; hence, they failed to qualify as subjects.[2]

Experimental Treatments

Students participating in the experiment during the Spring and Fall terms of 1964 were placed in Extreme Pro, Mild Pro, Mild Con or Extreme Con conditions on the basis of their pretest attitude scores. Students whose scores ranged from 43 to 54 on the attitude test, indicating they were the most favorably disposed toward the proposition that legalized abortion was

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[2]The study was conducted during the Spring, 1964, Fall, 1964, and Winter, 1965, terms. The number of students pretested in each of the three terms, respectively, was 202, 169, and 494 for a total of 864. Of the 864 pretested students, 153, 124 and 297 (total: 574) qualified as subjects. Equalization of groups within message treatments for analytic purposes further reduced the sample size to 384 subjects.

good, were classified as Extreme Pro subjects. Students whose scores ranged from 31 to 42 were classified as Mild Pro; those whose scores ranged from 18 to 30 were classified as Mild Con; and those whose scores ranged from 6 to 17, indicating they were least favorably disposed toward the proposition, were placed in the Extreme Con condition. On the assumption that different pretest attitude scores indicated different pre-experimental patterns of conditioning and unknown, but possibly differing, pre-experimental amounts of conditioning, it was decided that the different experimental treatment conditions should be considered as separate and independent studies of four different subject populations. After being placed in the experimental treatment conditions the subjects were randomly assigned to message treatment conditions.

Prior to random assignment of subjects to message treatments during the administration of the experiment in Winter term, 1965, it was decided that the small number of Mild Con subjects in the study justified reclassification of subjects. Consequently, all subjects from all three terms were reclassified as Pro, Neutral, or Con. The Pro condition included those subjects whose scores on the attitude pretest ranged from 43 to 54; the Neutral condition included those subjects whose attitude pretest scores ranged from 18 to 42[3]; the Con condition included those subjects whose attitude pretest scores ranged from 6 to 17. Winter term students were then randomly assigned to message treatments.

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[3]The neutral condition included a greater number of pro subjects (87) than con subjects (41).

Message Topic

On the basis of student response to four potential topics, the topic of legalized abortion (revision of existing abortion laws) was selected for use in the study. The four initial topics were rated through use of semantic differential scales by 108 students enrolled in an introductory speech course at Michigan State University during Winter term, 1964. The students were asked to judge the topics as possible issues for speech course presentations. Response distributions for the four topics on the two scales used as criteria for topic selection are found in Table 1 and Table 2.

Table 1. Frequency distributions of responses to four attitude topics on the (Bad-Good) scale of the Semantic Differential

	Bad	1	2	3	4	5	6	7 Good
Legalized Abortion		11	9	16	23	21	15	13
Trial by Jury		2	4	2	0	11	27	62
Compulsory Voting		2	13	29	19	17	19	9
Tariff on Rice		4	12	7	63	5	12	5

Table 2. Frequency distributions of responses to four attitude topics on the (Unimportant-Important) scale of the Semantic Differential

	Unimportant	1	2	3	4	5	6	7 Important
Legalized Abortion		2	2	1	14	21	32	36
Trial by Jury		0	0	0	4	12	24	68
Compulsory Voting		5	7	3	19	14	24	36
Tariff on Rice		32	26	22	20	4	3	1

The Bad-Good scale was used to measure subject attitudes toward the four topics, while the Unimportant-Important scale was used to measure the level of subject interest in the topic. It was sssumed that a measure of importance would provide an indication of which of the topics would be most likely to involve the subject, i,e., hold his interest and promote his attention to the message. The abortion topic was selected, and the other three topics were excluded, on the basis of relatively high importance in combination with a relatively equal distribution of pro and con responses.

Independent Variables

Statements and Messages -- A major assumption underlying this study was that each statement within a message represented the equivalent of a learning trial. Basic operationalization of the message variable was therefore centered on the preparation of statements.

Statements were limited to simple and complex sentences containing an explicit (i.e., non-ellipted) subject and predicate plus accompanying modifiers. Modifiers included adjectival and adverbial words, phrases, or clauses. Compound and compound-complex sentences were excluded.

Each statement was first prepared and presented to four judges. Each judge categorized each complete sentence as a statement that was favorable, unfavorable, or neutral toward revision of existing abortion laws. Ambiguous sentences were reworded and all sentences were then judged by ten graduate students. No sentence was retained which was judged by fewer than eight people as being in a particular category. Following are examples of the three categories of statements:

Abortion laws need revision and updating. (Favorable)

Whether existing abortion laws should be revised or retained without revision is an issue promoting a great deal of debate. (Neutral)

Existing abortion laws are adequate and accurate expressions of majority belief and opinion. (Unfavorable)

Messages were then prepared by combining sentences into texts appropriate for the different treatments. In those messages requiring more than one type of statement, e.g., pro and con statements, the order of types was randomly assigned in a manner identical to that usually employed in establishing random reinforcement schedules in learning experiments. Specific statements were then selected and placed according to contextual requirements, i.e., an attempt was made to make the content maximally readable within the reinforcement scheduling limits. Where it was believed necessary, transitional expressions were inserted to approximate usual message patterns more closely. For the same reason, statements were arranged in paragraph form and presented to subjects as mimeographed booklets. Appendix A contains copies of the messages presented to subjects.

In order to approximate reinforcement experiments for subjects with pre-experimental pro attitudes and subjects with pre-experimental con attitudes, the following messages (reinforcement schedules) were prepared:

Message Treatment	Reinforcement Schedule
34 Con Statements (The one-sided message represented by the same number of statements as the two-sided message. This treatment was assumed to maintain the relationship of this study with previous one-sided/two-sided studies in which messages were kept approximately equal in length.	100% Negative Reinforcement for Pro subjects; 100% Negative Reinforcement for Neutral subjects; 100% Positive Reinforcement for Con subjects. (Conditioning statements are assumed to be positive reinforcers for Pro and for Con subjects. Counterconditioning statements are assumed to be negative reinforcers as Pro and for Con subjects. Statements favoring the topic are assumed to be positive reinforcers for neutral subjects. Statements opposing the topic are assumed to be negative reinforcers for neutral subjects.)
17 Con Statements (The one-sided message equating number of reinforcements with two-sided messages. This treatment was assumed to maintain the relationship of this study with learning research in which number of reinforcements are equalized for total and partial reinforcement conditions.	100% Negative Reinforcement for Pro subjects; 100% Negative Reinforcement for Neutral subjects; 100% Positive Reinforcement for Con subjects.
17 Con Statements plus 17 Neutral Statements (The one-sided message with a partial reinforcement condition. This treatment was assumed to approximate the partial reinforcement condition of reinforcing half the learning trials and not reinforcing the other half.)	50% Negative Reinforcement/50% Non-Reinforcement for Pro and for Neutral subjects; 50% Positive Reinforcement/50% Non-Reinforcement for Con subjects.
17 Neutral Statements (This treatment was assumed to approximate the non-reinforcement condition usually included in learning research.)	0% Reinforcement for Pro, Neutral and Con subjects. (This treatment is assumed to be a mild counterconditioner for Pro and for Con subjects; i.e., some change is advocated.)

17 Pro Statements plus 17 Con Statements (The two-sided message with number of reinforcing statements equated with 17 statement messages above and below.)	85% Positive Reinforcement/50% Negative Reinforcement for all subjects.
17 Pro Statements plus 17 Neutral Statements (The rationale for this message is the same as the rationale for the 17 Con Statements plus 17 Neutral Statements message above.)	50% Positive Reinforcement/50% Non-Reinforcement for Pro subjects and for Neutral subjects; 50% Negative Reinforcement/50% Non-Reinforcement for Con subjects.
17 Pro Statements (The one-sided message equating number of reinforcements with two-sided messages. The rationale for this treatment is the same as the rationale for the 17 Con Statement treatment above.)	100% Positive Reinforcement for Pro subjects; 100% Positive Reinforcement for Neutral subjects; 100% Negative Reinforcement for Con subjects.
34 Pro Statements (The one-sided message represented by the same number of statements as the two-sided message. The rationale for this treatment is the same as the rationale for the 34 Con Statement treatment above.)	100% Positive Reinforcement for Pro subjects; 100% Positive Reinforcement for Neutral subjects; 100% Negative Reinforcement for Con subjects.

For purposes of analysis, certain message treatment conditions were designated as control conditions for the three experimental treatment groups. The 17 Neutral Statements message, as a non-reinforcing, non-conditioning treatment for Neutral subjects was designated the control or "no-change" message treatment for Neutral experimental treatments.

For Con subjects, who were assumed to have experienced mostly Con learning trials prior to the experiment, the 34 Con Statements message treatment and the 17 Con Statements message treatment were combined and were designated a control or "no-change" treatment. For Pro subjects, who were

assumed to have experienced mostly Pro learning trials prior to the experiment, the 34 Pro Statements message treatment and the 17 Pro Statements message treatment were combined and were designated the control or "no-change" treatment.

Time -- Operationally, this variable was defined as the time intervals between (1) pretest, (2) immediate posttest ($Posttest_1$), and (3) delayed posttest ($Posttest_2$). In the Spring, 1964, administration of the experiment, the time interval between pretest and immediate posttest was three weeks and the time interval between immediate posttest and delayed posttest was two weeks. Time intervals between pretest and immediate posttest, and between immediate posttest and delayed posttest, in Fall term, 1964, and Winter Term, 1965, were two weeks. While the variation in pretest-immediate posttest time intervals was necessary because course activities had priority in scheduling and the experiment had to be accommodated to the class schedule, it was not assumed that such variation of time prior to exposure to the message treatment would affect the experiment.

Dependent Variables

Attitude (Responses to Summary Evaluative Propositions) -- Six of the evaluative scales from Osgood, Suci, and Tannenbaum's factor analyses of the semantic differential were selected for the attitude measuring instrument: Negative-Positive; Bad-Good; Reject-Accept; Oppose-Favor; Dislike-Like; and Against-For. To eliminate order effects, three of the six scales were presented with the negative polar term at the left side of the scale, while three were presented with the negative polar term at the right. The concept, Legalized Abortion, was centered above the six scales.

Because the original intention had been to categorize subjects as either Pro or Con (i.e., to have four experimental treatment groups), the semantic differential scales were modified in order to force subjects to favor or to oppose the topic. Modification consisted of presenting eight intervals between the polar terms, plus allowing for a ninth alternative of writing the word irrelevant across the scale if, for any reason, the subject did desire to avoid commitment. Each scale was then scored as a nine point scale with the written irrelevant receiving a neutral interval rating of five. Since each subject's attitude was obtained by summing his score on the six scales, the scores ranged from an extreme con score of 6, through a neutral score of 30, to an extreme pro score of 54.

A single Summary Evaluative Proposition was assumed to be the conditioned stimulus of the experiment. For example, it was assumed that a pro message would increase the probability of a favorable response to the S.E.P., "Legalized abortion is good," while decreasing the probability of a favorable response to the S.E.P., "Legalized abortion is bad." A check of the response consistency of 202 subjects taking the pretest in Spring term, 1964, was conducted by computing product-moment correlations of the responses for each scale with the responses for every other scale and with the summated score of subjects' responses for the combined six scales. This intercorrelation matrix is presented in Table 3. The high correlation of each scale with the summated score (.88 or greater) indicated that each scale was a reliable predictor of the summated attitude score. At the same time, the intercorrelations among the six scales, ranging from 172 to .91, indicated that the use of the six scales did permit variability of

an individual subject's responses. (In accordance with the Osgood, et. al., rationale, the six evaluative scales were therefore assumed to provide finer degrees of intensity of response to the intended S.E.P. than a single scale.)

Table 3. Intercorrelation matrix of six evaluative scales and summated attitude score

	Negative Positive	Against For	Bad Good	Reject Accept	Dislike Like	Oppose Favor	Summated Score
Negative Positive	---						
Against For	.80	---					
Bad Good	.78	.86	---				
Reject Accept	.79	.88	.88	---			
Dislike Like	.72	.73	.85	.80	---		
Oppose Favor	.84	.91	.91	.91	.80	---	
Summated Score	.88	.93	.95	.94	.88	.96	---

The measuring instrument, together with instructions for marking the scales at the time of the pretest, the time of the immediate posttest and the time of the delayed posttest, may be found in Appendix B.

Information Recall Test -- A second dependent variable, an information recall test, was introduced into the study to serve as a learning criterion. Each message used in the study contained information which was assumed to be

equivalent to some of the information contained in every other message. Such equivalence was developed by taking twelve neutral statements and converting them to pro statements or to con statements by the addition of appropriate interpretive words, phrases or clauses. It was assumed that the value of this test as a learning criterion would be that differences in information recall between message treatments would tend to negate the assumption that statements (and, thus, "learning trials") were equal except for types of reinforcement.

Twelve, five-foil multiple choice test items were prepared and presented to subjects as a part of pretest, immediate posttest, and delayed posttest measurement procedures. The twelve recall test items, plus the accompanying instructions for each of the three testing periods, are presented in Appendix B.

Procedures

Administration of Pretest -- During one of the first sessions at the beginning of each term that the experiment was conducted, the instructor announced that there would be a study conducted during class time and within the classroom for which students could volunteer as subjects, receiving credit for participation as a part of the instructor's evaluation of a student's course performance. No information regarding the purpose of the experiment or the dates on which it would be conducted was given.

At the time of administration of the pretest, students were informed at the beginning of the class period that the study would be conducted that day. They were then told that a booklet would be distributed to each person who wished to participate and that specific instructions for

participation were presented on the first page of the booklet. They were asked not to talk with their classmates about the experiment and to work independently. Pretest booklets were then distributed.

The pretest booklet, with complete instructions, is presented in Appendix B. In addition to instructions for marking the measuring instruments, the instructions stated,

> Please print your name, student number, and the name of your instructor in the upper left hand corner of this page in the space provided. This information is absolutely necessary if you are to receive course credit for participation in this study. Please do it now before reading further instructions.
>
> The purpose of this study is to measure the way people judge topics of oral and written messages by having each person judge one topic on a series of descriptive scales. After the person has judged the topic on the descriptive scales, a second task is to answer some multiple choice information questions about the topic. Remember that your first task is to judge the topic on each of the descriptive scales in order.

After all subjects had responded to all items of the two measuring instruments, the booklets were collected. After collection, the instructor began his lecture.

Administration of Message Treatment Booklets -- At the time of administration of the message treatments the subjects were told that a second phase of the study of legalized abortion was to be conducted. Subjects were then told that each of them was to receive a booklet with his name on it. They were cautioned not to talk with each other about the experiment and to work independently. They were then asked to come to the front of the classroom to pick up their booklets and to return to their seats and proceed according to instructions contained within the booklet.

Prior to the beginning of the class session the booklets were arranged at the front of the classroom in an order based on an alphabetized roster of the students who had participated in the pretest. The booklets were arranged in alphabetical groupings of no more than 15 booklets in a group.

During the first two administrations of the study, only four message treatment conditions were prepared and presented to subjects. The four treatment conditions were the 34 Con Statements, the 17 Con Statements plus 17 Pro Statements, the 17 Pro Statements plus 17 Neutral Statements, and the 34 Pro Statements messages. The four additional message treatment conditions were added to the study for the third administration in Winter term, 1965.

The message treatment booklet included a coded cover sheet, a page of instructions regarding the subject's reading of the message, the message pages, a following page of instructions regarding the use of the attitude measuring instrument, a page containing the attitude measuring instrument, and a final page of concluding instructions.

Message Treatment Control Factor: Source Credibility -- One of the major identified variables in attitude change is source credibility. In order to minimize possibilities of confounding this variable with the independent variables, no quotations or references to authoritative sources were included in the messages. In addition, the instructions to the subjects prior to their reading their messages included the following statements:

> This topic is one of continued public importance, so, quite understandably, certain arguments have been presented by various sources concerning the issue of whether existing laws relevant to the topic should be modified or retained.

> On the next few pages you will find a summary of some of these arguments. Please read all of the statements since each statement is presented as a representative expression of the arguments concerning this topic.

Administration of Immediate Posttest -- Within the message treatment booklet, on the page immediately following the last message statement, the instructions to the subject included:

> Now that you have read the representative statements your next task is to judge the topic of legalized abortion on a series of descriptive scales similar to the scales you marked a few weeks ago. Be certain that you know the correct procedure for marking.

On the final page of the message treatment booklet were these instructions:

> There is one more task for you to complete today. However, the next task requires your receiving another booklet. Please wait quietly until everyone is finished with the task you have just completed. It is important that you do not discuss what you have read with your neighbors. As soon as everyone is through with this booklet, it will be picked up and the next task booklet will be distributed. Thanks for your cooperation and patience.

After subjects had completed their responses to the attitude measuring instrument, the message treatment booklets were collected and the booklet containing the information recall test was distributed. The information recall test was distributed as a second booklet to avoid a subject's referring to the printed message while answering the test items. When all subjects had responded to the information recall test items, the booklets were collected and the class resumed its course activity. Appendix B contains a copy of the message treatment booklet, minus the message sheets, and a copy of the information test booklet.

Administration of the Delayed Posttest -- At the time of administration of the delayed posttest, students were informed at the beginning of the class period that a third phase of the abortion study was to be conducted. Again they were cautioned not to discuss the experiment with their classmates and were told that a booklet containing instructions for participation would be distributed.

In addition to the instructions about how to mark the attitude measuring instrument and the information recall test, the instructions stated,

> Once again it is necessary that you print your name, student number, and the name of your instructor in the upper left hand corner of this page in the spaces provided. Your participation has been most helpful to this point and the remaining tasks require only a few minutes of time.
>
> You undoubtedly recall that the purpose of this study is to measure the way people judge topics by having each person judge one topic on a series of descriptive scales. After the person has judged the topic on the descriptive scales, a second task is to answer multiple choice information questions about the topic. Remember that your first task is to judge the topic on each of the descriptive scales in order. Be certain that you know the correct procedure for marking the scales.

When all subjects had responded to all items of the two measuring instruments, the delayed posttest booklets were collected and the class resumed its course activity. A copy of the delayed posttest booklet is contained in Appendix B.

CHAPTER III

RESULTS

The analyses reported below were conducted to test hypotheses concerning differences among message conditions in the acquisition and extinction of attitudes. Data from the three categories of experimental treatments--Neutral Subjects, Con Subjects and Pro Subjects -- were analyzed independently and constitute three separate tests of each hypothesis.

Since the hypotheses concerned either pretest-immediate posttest differences or immediate posttest-delayed posttest differences, $\underline{t}$ tests for differences and for differences between mean difference scores were employed. In each $\underline{t}$ test of the significance of a change across time (e.g., from pretest to immediate posttest) within a single message condition the error term employed was the standard error of the specific message condition's mean difference score with N-1 degrees of freedom. In tests comparing mean difference scores between two message conditions error terms were based on the pooled variance of the two sets of raw difference scores under test with $N_1 + N_2 - 2$ degrees of freedom. A summary of the means and standard deviations of the difference scores for all message conditions for the Neutral Subjects experimental treatments is contained in Table 30 of Appendix C. A similar summary for the Con Subjects experimental treatments is contained in Table 31 of Appendix C, and the equivalent summary for the Pro Subjects experimental treatments is contained in Table 32 of Appendix C.

In addition, within cells (Time x Message) means and standard deviations for the three experimental treatments are contained in Table 33, Table 34, and Table 35 of Appendix C for Neutral Subjects, Con Subjects and Pro Subjects respectively.

In the following analyses, one-tailed tests of significance were employed in all cases for which the hypotheses predicted the direction of change. In those cases for which no change was predicted, two-tailed tests of significance were used. Findings for which the probability is greater than .05 are reported as nonsignificant.

The assumed relationship between attitude change and consequent regression led to establishing certain procedures for testing hypotheses and concluding whether or not the hypotheses were statistically supported. An attitude change (pretest to immediate posttest) hypothesis was assumed to be supported if one of the two following conditions prevailed: (1) If the message condition which was predicted to result in the greater amount of attitude change (e.g., a one-sided message) showed a statistically significant pretest to immediate posttest mean difference while the message condition which was predicted to show a lesser amount of attitude change (e.g., the two-sided message) failed to show a significant mean difference; or, (2), if both message conditions showed significant pretest to immediate posttest change, the mean difference of the message condition which was predicted to result in the greater amount of change was significantly greater than the mean difference of the other message condition (i.e., a significant difference between the pretest-immediate posttest mean differences.)

In regard to regression hypotheses, it was considered necessary that the message conditions should indicate significant pretest to immediate posttest mean differences before a measurement of immediate posttest to delayed posttest regression could be made. This was considered an analogical equivalent of the learning research use of a criterion response level being attained by subjects before extinction research procedures are instituted. Therefore, if one or more of the message conditions failed to indicate significant pretest to immediate posttest change, testing the related immediate posttest to delayed posttest hypothesis was assumed to be statistically meaningless. In those instances for which a test of a regression hypothesis was made, differences in the amounts of regression between two message conditions were considered significant if the predicted greater regression of a message condition proved to be a significant immediate posttest-delayed posttest mean difference while the predicted lesser regression of the compared message condition proved to be a nonsignificant immediate posttest-delayed posttest mean difference.

Data for two general hypotheses (Numbers 9 and 10), predicting increases in the amount of attitude change and in the amount of attitude regression with increases in the amount of change advocated for all message conditions, are not summarized in the study. Comparisons indicated that no new information was provided by such a summary, i.e., the hypotheses were accepted or rejected on the basis of the data summarized in Hypothesis 7 and Hypothesis 8.

Hypotheses of the Study

Hypothesis 1

Total reinforcement (one-sided message) will result in a greater amount of attitude change than will partial reinforcement (two-sided message), if:

(a) total reinforcement is defined by a message of either x number of positively reinforcing (conditioning) or x number of negatively reinforcing (counterconditioning) statements.

(b) partial reinforcement is defined by a message of x number of positively reinforcing (conditioning) statements combined with x number of negatively reinforcing (counterconditioning) statements, and

(c) change is measured by pretest-immediate posttest ($Posttest_1$) differences.

Neutral Subjects Experimental Treatments - Table 4 contains a summary of the Pretest-$Posttest_1$ mean differences for each of the five message conditions for Neutral Subjects that were relevant to testing Hypothesis 1. The 100% Neutral message condition served as a control condition for testing the 50% Pro/50% Con message condition against the 100% Pro (17 Statements) message condition and for testing the 50% Pro/50% Con message condition against the 100% Con (17 Statements) message condition.

Table 4. Pretest Minus $Posttest_1$ Attitude Score Mean Differences of Neutral Subjects Experimental Treatment Relevant to Hypothesis 1.

	(N)	Pre-mean	$Post_1$-mean	D	t	p
100% Pro (17 State.) (1-sided)	(16)	31.13	43.19	-12.06	5.94	.0005-1T
50% Pro/50% Con (2-sided)	(16)	33.25	38.38	- 5.13	4.10	.0005-1T
100% Neutral	(16)	30.56	30.69	- .13	<1.00	N.S.
100% Con (17 State.) (1-sided)	(16)	31.88	31.19	.69	<1.00	N.S.

Significant pretest to $posttest_1$ changes in attitude occurred in the 100% Pro (17 Statements) and the 50% Pro/50% Con message conditions. No significant change occurred in the 100% Neutral control condition or with the 100% Con (17 Statements) experimental condition.

The non-significant finding for the 100% Con (17 Statements) message condition leaves Hypothesis 1 unsupported when the one-sided and two-sided messages advocate a Con position. The significant pretest to $posttest_1$ differences for the 100% Pro (17 Statements) and 50% Pro/50% Con message conditions permit a test of the hypothesis by comparing the mean difference scores for the two message conditions.

A *t* test of the critical difference between the -5.13 mean difference score for the 50% Pro/50% Con message condition and the -12.06 mean difference score for the 100% Pro (17 Statements) message condition indicates that the difference between mean differences is significant (Difference = 6.93; $t = 2.41$; $df = 30$; $p < .025$-1T) in the predicted direction. Therefore, the data for the Neutral Subjects experimental treatments support Hypothesis 1 when the one-sided and two-sided messages advocate a Pro position.

Con Subjects Experimental Treatment - Table 5 contains a summary of the pretest-$posttest_1$ mean differences for each of the three message conditions for Con subjects that were relevant to testing Hypothesis 1.

Table 5. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 1.

	(N)	Pre-mean	Post$_1$ mean	D	t	p
50% Pro/50% Con (2-sided)	(16)	11.06	19.31	-8.25	2.81	.01-1T
100% Pro (17 State.) (1-sided)	(16)	10.19	26.44	-16.25	3.74	.005-1T
100% Con (Control)	(32)	10.59	10.00	.59	$<$1.00	N.S.

The 100% Con (Control) condition represents a pooling of the 100% Con (34 Statements) and the 100% Con (17 Statements) message conditions data. Both the 50% Pro/50% Con and the 100% (17 Statements) Pro experimental conditions indicate significant pretest to posttest$_1$ changes in attitude. No significant change occurred in the 100% Con control condition.

A t test of the critical difference between the -8.25 mean difference score for the 50% Pro/50% Con message condition and the -16.25 mean difference score for the 100% Pro (17 Statements) message condition indicates that the difference is not significant (Critical difference = 8.00; t = 1.52; df= 30; $t_{.95}$= 1.70). Therefore, the data for Con Subjects experimental treatments fail to support Hypothesis 1.

Pro Subjects Experimental Treatment - Table 6 contains a summary of the pretest-posttest$_1$ mean differences for each of the three message conditions for Pro Subjects that were relevant to testing Hypothesis 1. The 100% Pro (Control) condition represents a pooling of the

Table 6. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Pro Subjects Experimental Treatments Relevant to Hypothesis 1.

	(N)	Pre-mean	Post mean	D	t	p
50% Pro/50% Con (2 sided)	(16)	48.94	48.50	.44	<1.00	N.S.
100% Con (17 State.) (1 sided)	(16)	46.06	41.94	4.13	1.49	N.S.
100% Pro (Control)	(32)	50.16	51.22	1.06	1.79	N.S.

100% Pro (34 Statements) and the 100% Pro (17 Statements) message conditions data. Neither the 50% Pro/50% Con nor the 100% Con (17 Statements) experimental condition indicates any significant pretest to posttest$_1$ change on the dependent variable. Thus, the data for Pro subjects fail to support Hypothesis 1.

Hypothesis 2

Total reinforcement (one-sided message) will result in a greater amount of attitude regression than will partial reinforcement (two-sided message), if:

(a) total reinforcement is defined as in Hypothesis 1 above,

(b) partial reinforcement is defined as in Hypothesis 1 above, and

(c) regression is measured by immediate posttest (Posttest$_1$)--delayed posttest (Posttest$_2$) differences.

Con Subjects Experimental Treatments - Table 8 contains a summary of posttest$_1$-posttest$_2$ mean differences for each of the three Con Subjects message conditions relevant to testing Hypothesis 2. The posttest$_1$-posttest$_2$ mean difference for the 100% Pro (17 Statements) experimental condition is significant. The posttest$_1$-posttest$_2$ mean differences for the 50% Pro/50% Con experimental condition and the 100% Con control condition are not significant. Therefore, since the total reinforcement message

Table 8. Posttest$_1$ Minus Postest$_2$ Attitude Source Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 2.

	(N)	Post$_1$ mean	Post$_2$ mean	D	t	p
50% Pro/50% Con	(16)	19.31	18.31	1.00	1.27	N.S.
100% Pro (17 State)	(16)	26.44	22.63	3.81	2.08	.05-1T
100% Con (Control)	(32)	10.00	11.38	-1.38	1.50	N.S.

shows significant posttest$_1$-posttest$_2$ regression while the partial reinforcement message does not, the data for Con Subjects experimental treatments support Hypothesis 2.

Pro Subjects Experimental Treatments - The failure of the relevant message conditions to support Hypothesis 1 (See Table 6) for Pro Subjects experimental treatments negates testing Hypothesis 2.

Hypothesis 3

The greater the number of learning trials, the greater the amount of attitude change, if

(a) the number of learning trials is defined by the number of statements in a total reinforcement (one-sided) message, and

(b) attitude change is measured by pretest-immediate posttest (Posttest$_1$) differences.

Neutral Subjects Experimental Treatment - Table 9 contains a summary of the pretest-posttest$_1$ mean differences for each of the five Neutral Subjects message conditions relevant to testing Hypothesis 3. The 100% Neutral message condition served as a control condition for testing the 100% Pro (34 Statements) message condition against the 100% Pro (17 Statements) message condition and for testing the 100% Con (34 Statements) message condition against the 100% Con (17 Statements) message condition.

Both the 100% Pro (34 Statements) message condition and the 100% Pro (17 Statements) message condition indicate significant pretest to posttest$_1$ changes in attitude. No significant change occurred in the

Table 9. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Neutral Subjects Experimental Treatments Relevant to Hypothesis 3.

	(N)	Pre-mean	Post$_1$ mean	D	t	p
100% Pro (34 State.)	(16)	33.38	41.06	-7.69	4.65	.0005-1T
100% Pro (17 State.)	(16)	31.13	43.19	-12.06	5.94	.0005-1T
100% Neutral (Control)	(16)	30.56	30.69	- .13	$<$1.00	N.S.
100% Con (17 State.)	(16)	31.88	31.19	.69	$<$1.00	N.S.
100% Con (34 State.)	(16)	32.56	29.25	3.26	1.85	.05-1T

100% Neutral control condition. However, the -7.69 mean difference score for the 100% Pro (34 Statements) experimental message condition is less than the -12.06 mean difference score for the 100% Pro (17 statements) experimental message condition. Therefore, on the basis of the predicted direction of the mean difference, the data for the two 100% Pro message conditions for Neutral subjects experimental treatments, fail to support Hypothesis 3.

The 100% Con (34 statements) message condition indicates significant pretest to $posttest_1$ changes in attitude, while the 100% Con (17 Statements) message condition does not. Therefore, the data for the two 100% Con message conditions for Neutral Subjects experimental treatments support Hypothesis 3.

Con Subjects Experimental Treatment - Table 10 contains a summary of the pretest-$posttest_1$ mean differences for each of the three Con Subjects message conditions relevant to testing Hypothesis 3.

Table 10. Pretest Minus $Posttest_1$ Attitude Score Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 3.

	(N)	Pre-mean	$Post_1$ mean	D	t	p
100% Pro (34 State.)	(16)	10.19	22.38	-12.19	3.20	.005-1T
100% Pro (17 State.)	(16)	10.19	26.44	-16.25	3.74	.005-1T
100% Con (Control)	(32)	10.59	10.00	.59	$<$1.00	N.S.

The 100% Con (Control) condition represents a pooling of the 100% Con (34 Statements) and the 100% Con (17 Statements) message conditions data. Both the 100% Pro (34 Statements) and the 100% Pro (17 Statements) experimental conditions indicate significant pretest to $posttest_1$ changes in attitude. No significant change occurred in the control condition. However, the -12.19 mean difference score for the 100% Pro (34 Statements) experimental message condition is less than the -16.25 mean difference score for the 100% Pro (17 Statements) experimental message condition. Therefore, on the basis of the predicted direction of the mean difference, the data for Con Subjects fail to support Hypothesis 3.

Pro Subjects Experimental Treatment - Table 11 contains a summary of the pretest-$posttest_1$ mean differences for each of the three Pro Subjects message conditions relevant to testing Hypothesis 3. The 100% Pro (Control) condition represents a pooling of the 100% Pro (34 Statements) and the 100% Pro (17 Statements) message conditions data. The 100% Con (34 Statements) experimental condition indicates significant pretest to $posttest_1$ change in attitude. No significantchange occurred in the 100% Con (17 Statements) experimental condition nor in the control condition. Therefore, on the basis of significant change occurring in the 100% Con (34 Statements) message condition, and no significant change occurring in the 100% Con (17 Statements) message condition, the data support Hypothesis 3.

Table 11. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Pro Subjects Experimental Treatments Relevant to Hypothesis 3.

	(N)	Pre-mean	Post$_1$ mean	D	t	p
100% Con (34 State.)	(16)	47.44	39.63	8.31	2.13	.05-1T
100% Con (17 State.)	(16)	46.06	41.94	4.31	1.49	N.S.
100% Pro (Control)	(32)	50.16	51.22	-1.06	1.79	N.S.

Hypothesis 4

The greater the number of learning trials, the less the amount of attitude regression, if

(a) the number of learning trials is defined by the number of statements in a total reinforcement (one-sided) message, and

(b) regression is measured by immediate posttest (Posttest$_1$)--delayed posttest (Posttest$_2$) differences.

Neutral Subjects Experimental Treatment - Table 12 contains a summary of the posttest$_1$-posttest$_2$ mean differences for each of the three Neutral Subjects message conditions relevant to testing Hypothesis 4. (The 100% Con message conditions were excluded because of failure of the 100% Con (17 Statements) message condition to reach pretest-posttest$_1$ statistical significance: Table 9). The posttest$_1$-posttest$_2$ mean difference for the 100% Pro (17 Statements) experimental condition is significant. The posttest$_1$-posttest$_2$ mean differences for the 100% Pro (34 Statements)

Table 12. Posttest$_1$ Minus Posttest$_2$ Attitude Score Mean Differences of Neutral Subjects Experimental Treatments Relevant to Hypothesis 4.

	(N)	Post$_1$ mean	Post$_2$ mean	D	t	p
100% Pro (34 State.)	(16)	41.06	39.38	1.69	1.14	N.S.
100% Pro (17 State.)	(16)	43.19	40.81	2.38	2.43	.025-1T
100% Neutral (Control)	(16)	30.69	32.06	-1.38	<1.00	N.S.

experimental condition and the 100% Neutral control condition are not significant. Therefore, since the 17 Statement message shows significant posttest$_1$-posttest$_2$ regression while the 34 Statement message does not, the Pro message data for Neutral Subjects experimental treatments support Hypothesis 4.

Con Subjects Experimental Treatments - Table 13 contains a summary of the posttest$_1$-posttest$_2$ mean differences for each of the three Con Subjects message conditions relevant to testing Hypothesis 4. The posttest$_1$-posttest$_2$ mean difference for the 100% Pro (17 Statements) experimental condition is significant. The posttest$_1$-posttest$_2$ mean differences for the 100% Pro (34 Statements) experimental condition and the 100% Con control condition are not significant. Therefore, since the 17 Statements message shows significant posttest$_1$-posttest$_2$ regression while the 34 Statements message does not, the data for Con Subjects experimental treatments support Hypothesis 4.

Table 13. $Posttest_1$ Minus $Posttest_2$ Attitude Score Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 4.

	(N)	$Post_1$ mean	$Post_2$ mean	D	t	p
100% Pro (34 State.)	(16)	22.38	26.63	-4.25	1.56	N.S.
100% Pro (17 State.)	(16)	26.44	22.63	3.81	2.08	.05-1T
100% Con (Control)	(32)	10.00	11.38	-1.38	1.50	N.S.

Hypothesis 5[4]

Total reinforcement will result in a greater amount of attitude change than will partial reinforcement, if

(a) total reinforcement is defined as in Hypothesis 1 above,

(b) partial reinforcement is defined by a message of x number of non-reinforcing (neutral) statements combined with either x number of positively reinforcing (conditioning) or x number of negatively reinforcing (counterconditioning) statements, and

(c) change is measured by pretest--immediate posttest ($Posttest_1$) differences.

Neutral Subjects Experiment Treatment - Table 14 contains a summary of the pretest-$posttest_1$ mean differences for each of the five Neutral

[4]Hypothesis 5 is similar to Hypothesis 1, but differs in the operational definition of partial reinforcement. Hypothesis 5 is assumed to approximate analogous learning research hypotheses more closely than Hypothesis 1 because non-reinforcement is defined by neutral statements rather than by opposing statements.

Subjects message conditions relevant to testing Hypothesis 5. The 100% Neutral message condition was assumed to be a control condition for

Table 14. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Neutral Subjects Experimental Treatments Relevant to Hypothesis 5.

	(N)	Pre-mean	Post$_1$ mean	D	t	p
50% Pro/50% Neutral	(16)	33.00	40.63	- 7.63	4.39	.0005-1T
100% Pro (17 State.)	(16)	31.13	43.19	-12.06	5.94	.0005-1T
50% Con 50% Neutral	(16)	35.63	31.31	4.32	2.03	.05-1T
100% Con (17 State.)	(16)	31.88	31.19	.69	<1.00	N.S.
100% Neutral (Control)	(16)	30.56	30.69	- .13	<1.00	N.S.

testing the 50% Pro/50% Neutral message condition against the 100% Pro (17 Statements) message condition and for testing the 100% Con (17 Statements) message condition against the 50% Con/50% Neutral message condition.

Both the 50% Pro/50% Neutral message condition and the 100% Pro (17 Statements) message condition indicate significant pretest to posttest$_1$ changes in attitude. No significant change occurred in the 100% Neutral control condition.

By contrast, neither the 50% Con/50% Neutral nor the 100% Con (17 Statements) experimental message conditions indicate any significant pretest to posttest$_1$ changes on the dependent variable.

A t test of the critical difference between the -7.63 mean

difference score for the 50% Pro/50% Neutral message condition and the -12.06 mean difference score for the 100% Pro (17 Statements) message condition indicates that the difference between mean differences is significant at approximately the .06 level of probability (Difference 4.43; $t = 1.66$, $df = 30$; $t_{.95} = 1.70$). However, since the .05 alpha level had been established prior to analysis, it is concluded that the data for Neutral Subjects experimental treatments fail to support Hypothesis 5.

Con Subjects Experimental Treatment - Table 15 contains a summary of the pretest-posttest$_1$ mean differences for each of the three Con Subjects message conditions relevant to testing Hypothesis 5. The 100% Con (Control)

Table 15. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 5.

	(N)	Pre-Mean	Post$_1$ mean	D	t	p
50% Pro/50% Neutral	(16)	10.25	22.00	-11.75	2.83	.01-1T
100% Pro	(16)	10.19	26.44	-16.25	3.74	.005-1T
100% Con (Control)	(32)	10.59	10.00	.59	<1.00	N.S.

condition again represents a pooling of the 100% Con (34 Statements) and the 100% Con (17 Statements) message conditions data. Both the 50% Pro/50% Neutral and the 100% Pro (17 Statements) experimental conditions indicate significant pretest to posttest$_1$ changes in attitude. No significant change occurred in the 100% Con (Control) condition.

A test of the critical difference between the -11.75 mean difference score for the 50% Pro/50% Neutral message condition and the -16.25 mean difference score for the 100% Pro (17 Statements) message condition resulted in a non-significant t (Difference = 4.50; $t < 1.00$). Therefore, the data for Con Subjects experimental treatments fail to support Hypothesis 5.

Pro Subjects Experimental Treatment - Table 16 contains a summary of the pretest-posttest$_1$ mean differences for each of the three Pro Subjects message conditions relevant to testing Hypothesis 5. The 100% Pro

Table 16. Pretest Minus Posttest$_1$ Attitude Score Mean Differences of Pro Subjects Experimental Treatments Relevant to Hypothesis 5

	(N)	Pre mean	Post$_1$ mean	D	t	p
50% Con/50% Neutral	(16)	48.13	46.25	1.88	<1.00	N.S.
100% Con (17 State.)	(16)	46.06	41.94	4.12	1.49	N.S.
100% Pro (Control)	(32)	50.16	51.22	-1.06	1.79	N.S.

(Control) condition again represents a pooling of the 100% Pro (34 Statements) and the 100% Pro (17 Statements) message conditions data. Neither the 50% Con/50% Neutral nor the 100% Con (17 Statements) experimental message conditions indicate any significant pretest to posttest$_1$ changes. Therefore, the data for the Pro Subjects experimental treatment fail to support Hypothesis 5.

Hypothesis 6[5]

Total reinforcement will result in a greater amount of attitude regression than will partial reinforcement, if

(a) total reinforcement is defined as in Hypothesis 1 above,

(b) partial reinforcement is defined as in Hypothesis 5 above, and

(c) regression is measured by immediate posttest ($Posttest_1$) delayed posttest ($Posttest_2$) differences.

Neutral Subjects Experimental Treatment - Table 17 contains a summary of the $posttest_1$--$posttest_2$ mean differences for each of the three Neutral Subjects message conditions relevant to testing Hypothesis 6.

Table 17. $Posttest_1$ Minus $Posttest_2$ Attitude Score Mean Differences of Neutral Subjects Experimental Treatments Relevant to Hypothesis 6.

	(N)	$Post_1$ mean	$Post_2$ mean	D	t	p
50% Pro/50% Neutral	(16)	40.63	38.00	2.63	3.21	.005-1T
100% Pro (17 State.)	(16)	43.19	40.81	2.38	2.43	.025-1-T
100% Neutral (Control)	(16)	30.69	32.06	-1.38	<1.00	N.S.

The Con message conditions were excluded by failure of the 100% Con (17 Statements) message condition to reach pretest-$posttest_1$ statistical significance: Table 14. $Posttest_1$-$posttest_2$ mean differences for both the 50% Pro/50% Neutral and the 100% Pro (17 Statements) experimental

[5]Hypothesis 6 is similar to Hypothesis 2, but differs in the operational definition of partial reinforcement.

message conditions are significant. However, the 2.63 mean difference score for the 50% Pro/50% Neutral message condition is greater than the 2.38 mean difference score for the 100% Pro (17 Statements) message condition. Therefore, on the basis of the predicted direction of the difference between mean differences, the data for Neutral Subjects experimental treatments fail to support Hypothesis 6.

Con Subjects Experimental Treatments - Table 18 contains a summary of the $posttest_1$-$posttest_2$ mean differences for each of the three Con Subjects message conditions relevant to testing Hypothesis 6.

Table 18. $Posttest_1$ Minus $Posttest_2$ Attitude Score Mean Differences of Con Subjects Experimental Treatments Relevant to Hypothesis 6.

	(N)	$Post_1$ mean	$Post_2$ mean	D	t	p
50% Pro/50% Neutral	(16)	22.00	22.19	- .19	<1.00	N.S.
100% Pro (17 State.)	(16)	26.44	22.63	3.81	2.08	.05=1T
100% Con (Control)	(32)	10.00	11.38	-1.38	1.50	N.S.

The $posttest_1$-$posttest_2$ mean difference for the 100% Pro (17 Statements) experimental condition is significant. The $posttest_1$-$posttest_2$ mean differences for the 50% Pro/50% Neutral and the 100% Con (Control) message conditions are not significant. Therefore, the data for Con Subjects experimental treatments support Hypothesis 6.

Pro Subjects Experimental Treatment - The failure of the pretest-posttest$_1$ mean differences for the 50% Con/50% Neutral and the 100% Con (17 Statements) experimental message conditions to reach statistical significance (See Table 16) negates testing Hypothesis 6 for Pro Subjects experimental treatments.

Hypothesis 7

The greater the difference between a subject's pretest attitude[6] and the amount of change advocated by a message, the greater the amount of attitude change, if

(a) the amount of change advocated by a message is defined by the ratios of positively reinforcing, non-reinforcing, and negatively reinforcing statements to the total number of statments,

(b) the total number of statements is held constant for all messages, and

(c) change is measured by pretest--immediate posttest (Posttest$_1$) differences.

Con Subjects Experimental Treatments - Table 19 contains a summary of the pretest-posttest$_1$ mean differences for the five Con Subjects 34-Statement messages relevant to testing Hypothesis 7. With the messages rank ordered according to the amount of change advocated, the least amount of change is advocated by the 100% Con (34 Statements) message, while the greatest amount is advocated by the 100% Pro (34 Statements) message.

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[6]The rationale of the study assumes that a Neutral Subject may not have a pretest attitude. Therefore, Neutral Subjects experimental treatments are not included in the data analyses for Hypotheses 7 and 8.

Table 19. Pretest Minus $Posttest_1$ Attitude Score Mean Differences for Five 34 Statement Message Conditions for Con Subjects Experimental Treatment Relevant to Hypothesis 7.

	(N)	Pre mean	Post mean	D	t	p
100% Pro (34 State.)	(16)	10.19	22.38	-12.19	3.20	.005-1T
50% Pro/50% Neutral	(16)	10.25	22.00	-11.75	2.83	.01-1T
50% Pro/50% Con	(16)	11.06	19.31	- 8.25	2.81	.01-1T
50% Con/50% Neutral	(16)	8.25	14.56	- 6.31	2.08	.025-1T
100% Con (34 State.)	(16)	10.50	10.50	0.00	0.00	N.S.

In general, the amount of change produced (D) increases with increases in the amount of change advocated.

Table 20 contains a summary of the critical differences among $posttest_1$ means for the five message conditions. Differences were tested

Table 20. Critical Differences Among $Posttest_1$ Attitude Score Means for Five 34 Statement Message Conditions for Con Subjects Experimental Treatments Relevant to Hypothesis 7.

	100% Con (34 State.)	50% Con 50% Neutral	50% Pro 50% Con	50% Pro 50% Neutral	100% Pro (34 State.)
100% Con (34 State.)	-	4.06	8.61*	11.50*	11.88*
50% Con 50% Neutral		-	4.75	7.44*	7.81*
50% Pro 50% Con			-	2.69	3.06
50% Pro 50% Neutral				-	.375
100% Pro (34 State.)					-

*P = .05. Critical Difference = 6.49 (Cochran approximate t test)

by a critical difference t test with the error term derived from the within-cells sums of squares of an A X B factorial analysis of variance for repeated measures. The critical difference is therefore an approximation.

Comparisons among the five message condition means indicate that the message condition advocating the greatest amount of change (100% Pro) for Con Subjects differs significantly from the message conditions advocating the least (100% Con) and the next least (50% Con/50% Neutral) amounts of change. Similarly, the message condition ranked second in amount of change advocated (50% Con/50% Neutral) also differs significantly from the two message conditions advocating the least and the next least amounts of change. The mid-rank message condition (50% Pro/50% Con) differs significantly from the message condition advocating the least change but does not differ significantly from any other message. In general, significant increases in the amount of change observed occur with increases in the amount of change advocated. Consequently, the data for Con Subjects experimental treatments support Hypothesis 7.

Pro Subjects Experimental Treatments - Table 21 contains a summary of pretest-posttest$_1$ mean differences for the five Pro Subjects statements messages relevant to testing Hypothesis 7. Only one message condition, the 100% Con (34 Statements) condition indicates significant pretest-posttest$_1$ change. Therefore, on the basis that the message advocating the greatest amount of change is significantly different from all messages advocating lesser degrees of change, the data for Pro Subjects support Hypothesis 7.

Table 21. Pretest Minus $Posttest_1$ Attitude Score Mean Differences for Five 34 Statement Message Conditions for Pro Subjects Experimental Treatment Relevant to Hypothesis 7.

	(N)	Pre mean	$Post_1$ mean	D	t	p
100% Con (34 State.)	(16)	47.44	39.63	8.31	2.13	.05-1T
50% Con/50% Neutral	(16)	48.13	46.25	1.88	<1.00	N.S.
50% Pro/50% Con	(16)	48.94	48.50	.44	<1.00	N.S.
50% Pro/50% Neutral	(16)	47.56	49.44	-1.88	1.59	N.S.
100% Pro (34 State.) (Control)	(16)	49.31	50.81	-1.50	1.76	N.S.

Hypothesis 8

The greater the difference between a subject's pretest attitude and the amount of change advocated by a message, the greater the amount of attitude regression, if

(a) the amount of change advocated by a message is defined as in Hypothesis 7 above,

(b) the total number of statements is held constant for all messages, and

(c) regression is measured by immediate posttest ($Posttest_1$)--delayed posttest ($Posttest_2$) differences.

Con Subjects experimental Treatments - Table 22 contains a summary of $posttest_1$-$posttest_2$ mean differences for the five Con Subjects 34 statements messages relevant to testing Hypothesis 8. None of the five message conditions indicates significant $posttest_1$-$posttest_2$ change.

Table 22. $Posttest_1$ Minus $Posttest_2$ Attitude Score Mean Differences for Five 34 Statement Message Conditions for Con Subjects Experimental Treatment Relevant to Hypothesis 8

	(N)	$Post_1$ mean	$Post_2$ mean	D	t	p
100% Pro (34 State.)	(16)	22.38	26.63	-4.25	1.56	N.S.
50% Pro/50% Neutral	(16)	22.00	22.19	- .19	<1.00	N.S.
50% Pro/50% Con	(16)	19.31	18.31	1.00	1.27	N.S.
50% Con/50% Neutral	(16)	14.56	17.75	-3.19	<1.00	N.S.
100% Con (34 State.)	(16)	10.50	13.38	-2.88	1.91	N.S.-2T

Therefore, the data for Con Subjects experimental treatments fail to support Hypothesis 8.

Pro Subjects Experimental Treatment - The failure of four of the five Pro Subjects 34 statements messages to reach pretest-$posttest_1$ statistical significance (See Table 21) negates the testing of Hypothesis 8.

Additional Analyses

Response to Message Content

The major reason for including a second dependent variable, response to message content (information recall test), was to provide a learning criterion. It was assumed that its value as a criterion would be that differences in objective recall among message conditions would tend to negate the assumption that statements (and, thus, "learning trials") were equal except for types of reinforcement.

Table 23. Summary of Statistical Results for Eight Hypotheses tested by Data for Three Experimental Treatments

	Neutral Subjects		Con Subjects	Pro Subjects
	Pro Messages	Con Messages	Pro Messages	Con Messages
Hypothesis				
(1)	S*	NS**	NS	NS
(2)	S	NT***	S	NT
(3)	NS	S	NS	S
(4)	S	NT	NS	NT
(5)	NS	NS	NS	NS
(6)	NS	NT	S	NT
(7)	NT	NT	S	S
(8)	NT	NT	NS	NT

*S Statistically significant
**NS Non-significant
***NT Not tested

A summary of the within cells (Time x Message) means and standard deviations for the Neutral Subjects experimental treatments is contained in Table 36 of Appendix C. A similar summary for the Con Subjects experimental treatments is contained in Table 37 of Appendix C, and the equivalent summary for Pro Subjects experimental treatments is contained in Table 38 of Appendix C.

Neutral Subjects Experimental Treatments - Table 24 contains a summary of the two factor analysis of variance for repeated measures used to test the significance of the information recall test data for Neutral Subjects experimental treatments.

Table 24. Summary of Two Factor Analysis of Variance of Information Recall Test Scores for Neutral Subjects Experimental Treatment

Source of Variation	df	MS	F	P
Messages	7	8.35	1.69	N.S.
$Error_{(b)}$	120	4.95		
Time	2	814.29	358.24	.01
Time X Messages	14	4.28	1.88	.05
$Error_{(w)}$	240	2.27		

The significant Time x Message interaction prompted testing the simple effects for messages for each of the three times that the information recall test was administered, and the simple effects of each message condition across time. All message conditions indicated significant pretest to $posttest_1$ changes and significant $posttest_1$-$posttest_2$ changes.

Table 25 contains a summary of the three simple effects analyses of variance (employing the same within cells error term) used to test the significance of message effects at the times of pretest, immediate posttest, and delayed posttest. It can be seen that the null hypothesis

that all message conditions are equivalent cannot be rejected for any of the three times of testing.

Table 25. Summary of Simple Effects Analysis of Information Recall Test Scores for Eight Message Conditions at Times of Pretest, $Posttest_1$, and $Posttest_2$ for Neutral Subjects Experimental Treatment.

Source of Variation	df	MS	F	P
Eight Message Conditions at time of				
Pretest	7	3.63	1.14	N.S.
Posttest #1	7	3.53	1.11	N.S.
Posttest #2	7	3.65	1.15	N.S.
Error (within cells)	120	3.16		

Con Subjects Experimental Treatments - Table 26 contains a summary of the two factor analysis of variance for repeated measures used to test the significance of the information recall test data for Con Subjects experimental treatments. Only the Time effect is statistically significant.

Simple effects analyses indicate that pretest-$posttest_1$ changes and $posttest_1$-$posttest_2$ changes are significant for all message conditions. The null hypothesis that all message conditions are equivalent is not rejected.

Table 26. Summary of Two Factor Analysis of Variance of Information Recall Test Scores for Con Subjects Experimental Treatment

Source of Variation	df	MS	F	P
Messages	7	2.67	<1.00	N.S.
$Error_{(b)}$	120	5.83		
Time	2	757.65	287.86	.01
Time X Messages	14	2.31	<1.00	N.S.
$Error_{(w)}$	240	2.63		

Pro Subjects Experimental Treatments - Table 27 contains a summary of the two factor analysis of variance for repeated measures used to test the significance of the information recall test data for Pro Subjects experimental treatments. The significant message effect prompted testing the simple effects for messages for each of the three times that the

Table 27. Summary of Two Factor Analysis of Variance of Information Recall Test Scores for Pro Subjects Experimental Treatment

Source of Variation	df	MS	F	P
Messages	7	13.02	2.88	.05
$Error_{(b)}$	120	4.52		
Time	2	815.07	185.70	.01
Time X Messages	14	6.12	1.39	N.S.
$Error_{(w)}$	240	4.39		

information recall test was administered.

Table 28 contains a summary of the three simple effects analyses of variance (employing the same within cells error term) used to test the significance of message effects at the times of pretest, immediate posttest, and delayed posttest. It can be seen that delayed pretest messages effects are significant.

Table 28. Summary of Simple Effects Analysis of Information Recall Test Scores for Eight Message Conditions at Times of Pretest, $Posttest_1$, and $Posttest_2$ for Pro Subjects Experimental Treatment

Source of Variation	df	MS	F	P
Eight Message Conditions at time of				
Pretest	7	4.27	<1.00	N.S.
Posttest #1	7	6.00	1.35	N.S.
Posttest #2	7	15.15	3.42	.01
$Error_{(within\ cells)}$	120	4.43		

Simple effects analysis of pretest to $posttest_1$ changes and $posttest_1$-$posttest_2$ changes in information recall test scores for Pro Subjects experimental treatments indicates that all subjects showed significant changes across both time phases of the study.

A test of critical differences among the delayed posttest message means indicates that the 100% Con (17 Statements) and the 100% Pro (17 Statements) message conditions showed enough regression from

posttest$_1$-posttest$_2$ to account for nine of twelve significant differences among the delayed posttest means. A summary of the critical differences among the posttest$_2$ information recall test means for Pro Subjects experimental treatments is contained in Table 29. The eight message conditions are rank ordered with the lowest posttest$_2$ message condition mean placed as the left member of the column means and as the top member of the row means.

Table 29. Critical Difference Test for Posttest$_2$ Message Condition Means of Information Recall Test Scores for Pro Subjects Experimental Treatment

	100% Con (17 State)	100% Pro (17 State)	50% Con 50% Neut.	100% Pro (34 State)	100% Neut.	100% Con (34 Stat)	50% Pro 50% Neut	50% Pro 50% Con
100% Con (34 State.)	-	.44	1.06	1.50*	1.69*	1.94*	2.63*	2.75*
100% Pro (17 State.)		-	.63	1.06	1.25*	1.50*	2.19*	2.31*
50% Con 50% Neutral			-	.44	.63	.88	1.56*	1.69*
100% Pro (34 State.)				-	.19	.44	1.13	1.25*
100% Neutral					-	.25	.94	1.06
100% Con (34 State.)						-	.69	.81
50% Pro 50% Neutral							-	.13
50% Pro 50% Con								-

*P .05. Critical Difference by approximate t test: 1.23

As Table 29 indicates, the 50% Pro/50% Con message condition ranked first in the mean number of test-items answered correctly by Pro Subjects at the time of delayed posttest. Inspection of the rank order of message condition mean values for Neutral Subjects and for Con Subjects indicates that the 50% Pro/50% Con message condition ranked first among all message conditions for all experimental treatments. In general, subjects exposed to 34 statement messages performed better on the information recall test both at the time of immediate recall and at the time of delayed recall than subjects exposed to the 100% Con (17 Statements) and the 100% Pro (17 Statements) messages. No significant correlation was found between attitude change scores and information recall test scores for any one of the three experimental treatments.

CHAPTER IV

CONCLUSIONS, DISCUSSION, AND IMPLICATIONS FOR FURTHER RESEARCH

Conclusions

It seems clear that the amounts of attitude change observed under one-sided and two-sided message conditions are analogically consistent with critical response changes occurring under total reinforcement and partial reinforcement learning conditions. Although the hypothesis (Number 1) that a one-sided message would result in significantly more attitude change than a two-sided message was supported at the required significance level only under conditions involving exposure of Neutral subjects to Pro messages, the trends of other relevant data consistently support the tenability of the hypothesis. Under circumstances involving exposure of Con subjects to Pro messages, the data are significant at the .07 level. As predicted, Pro subjects in the two-sided message condition moved only slightly toward a Con position (pretest mean: 48.94; $posttest_1$ mean: 4850), while Pro subjects in the one-sided message condition showed greater movement toward a Con position (pretest mean: 46.06; $posttest_1$ mean: 41.94).

Similarly, regression differences also indicate that one-sided and two-sided messages are analogous in regard to extinction effects (Hypothesis 2) with total and partial reinforcement of learning. The statistically significant regression effect in this study appears to result from the difference in the number of "learning trials" or statements contained in the messages (34 for partial reinforcement, 17 for total

reinforcement) rather than in the differences in reinforcement schedules. When the total reinforcement condition consisted of 34 statements (Hypothesis 4), no significant regression was found. However, there was some indication that the one-sided message did regress faster than the two-sided, regardless of length.

It should be noted that there is little inconsistency in the regression findings and Mowrer's interpretation of the reinforcement of learning. According to Mowrer, it is not the number of reinforcements that determines resistance to extinction; rather, extinction rate is determined by the total number of conditioning trials (whether or not they were reinforced) plus the contrast between the conditioning and later counterconditioning (extinction) trials. Although the amount of regression for a 34 statement one-sided message should be somewhat greater than the amount for a two-sided message, because of the conditioning-counterconditioning contrast, the difference should be most pronounced for the less stably conditioned 17 statement, one-sided message compared with the longer, two-sided message. These differences are indicated by the data. Except under circumstances of Con subjects reading the one-sided Pro message, the amount of regression for subjects who read the one-sided, 34 statement messages was somewhat greater than the amount of regression for subjects who read the 34 statements of the two-sided message.

Although pretest to immediate posttest mean difference scores for 34 statement and 17 statement 100% Pro messages were not significantly different from each other (Hypothesis 3), the mean difference values for both Neutral subjects and Con subjects indicate that the 100% Pro

(34 Statements) message results in somewhat less attitude change than the 100% Pro (17 Statements) message. The data oppositely indicate that the 100% Con (34 Statements) message results in somewhat more attitude change than the 100% Con (17 Statements) message. These inconsistencies, in addition to indicating that effects of Con statements on subjects may differ from the effects of Pro statements on subjects, raise some doubt about the assumption that sentences may be combined as reinforcements in a simple, additive process. These implications will be considered more extensively in the following discussion section.

Since partial reinforcement messages containing Neutral sentences (50% Con/50% Neutral and 50% Pro/50% Neutral message conditions) did not differ significantly from their total reinforcement counterparts, no definite conclusions regarding Hypothesis 5 may be derived from the study. Once again, however, the trend of the attitude change data implies that the analogy of attitude research and learning research can account for differences in message effects.

In all but one test of Hypothesis 5, one-sided, total reinforcement messages resulted in more attitude change than partial reinforcement messages. For Con subjects, the partial reinforcement condition showed a -11.75 pretest-posttest$_1$ change, while the total reinforcement condition resulted in a -16.25 pretest-posttest$_1$ change, consistent with the predicted direction of differences but not significantly different. For Pro subjects, the partial reinforcement pretest-posttest$_1$ mean difference was 1.88 compared with the 4.13 pretest-posttest$_1$ mean difference for total reinforcement, also consistent with the hypothesized direction of differences.

For Neutral subjects, the difference between the 50% Pro/50% Neutral pretest-posttest$_1$ difference (-12.06) resulted in a *t* value of 1.66, when a *t* value of 1.70 would have supported the hypothesis. Only under circumstances of Neutral subjects reading Con messages did the trend of the data not conform to the predicted direction of differences.

No specific conclusion regarding Hypothesis 6 is indicated. Significant regression occurred with Neutral subjects in the 50% Pro/50% Neutral (partial reinforcement) condition as well as the 100% Pro (total reinforcement) condition. Only the total reinforcement condition showed significant regression effects with Con subjects.

The more general hypothesis (Number 7), that amount of attitude change observed increases with increases in the amount of change advocated (given an equal number of statements in each message), was supported by significant differences in the amount of change occurring for Con subjects exposed to messages containing Pro statements as compared with Con subjects exposed to message containing no Pro statements (i.e., 100% Con and 50% Con/50% Neutral). It was also supported by Pro subjects showing significant change after exposure to a 100% Con message and no significant change after exposure to less extreme Con messages.

The general regression hypothesis (Number 8) was not supported. If regression does vary according to the amount of change advocated by a message, the two weeks time period between immediate posttest and delayed posttest is not sufficient to detect differences within the limits of measurement used in the study.

Since the rate of forgetting typically varies with the type of response criterion employed to measure it, it is not surprising that responses to the information recall test showed significant regression effects while responses to the attitude test generally did not. The unexpected finding of significant differences of information recall scores among message conditions for the Pro subjects experimental treatment at the time of the delayed posttest appears to be consistent with the failure of the Con message conditions to result in significant attitude change for Pro subjects. The relationship between the information recall test responses and the attitude test responses will be considered more fully in the next section.

Discussion

Although data did not reach statistically significant levels in all tests of reinforcement schedule effects, most trends of the data are encouraging; i.e., they are consistent with the analogy and provide justification for concluding that the rationale presented in the first chapter is a useful one for attitude research. One factor which limits the generality of the obtained results is the relatively consistent failure of Con messages, opposing revision of abortion laws, to result in attitude change, while Pro messages, favoring revision, were effective.

A parsimonious explanation of differences between the data for Con subjects and Neutral subjects in Pro message conditions and the data for Pro subjects and Neutral subjects in Con message conditions is simply to consider the Con messages as inadequate stimuli. Simple rejection of

the effectiveness of the message, however, ignores the possibility that an additional reason for the failure of Con message conditions and the success of Pro message conditions to result in significant attitude change may be that Con subjects were less knowledgeable, (i.e., had experienced fewer "learning trials") about the topic than were Pro and Neutral subjects.

It was assumed that a subject's pretest attitude score provided no indication of the number of "learning trials" he had experienced prior to the experiment. Therefore, the following consideration of differences between the data for Con subjects and the data for Pro and for Neutral subjects illustrates the need for attitude research procedures that identify subjects' pre-experimental learning.

Although none of the changes are significant, subjects in five of the eight Con subjects message conditions moved toward a Pro position (favoring revision of abortion laws) during the two weeks interval between the immediate posttest and the delayed posttest. These five changes are contrary to the predicted regression, i.e., movement back to the pre-experimental Con attitude level. In contrast, subjects in only two Neutral subjects message conditions and only one Pro subjects message condition moved opposite to the predicted regression trend. (128 Con subjects $posttest_1$ mean was 17.92 moving to a $posttest_2$ mean value of 18.64; 128 Neutral subjects $posttest_1$ mean was 35.71, moving to a $posttest_2$ mean value of 35.41; 128 Pro subjects $posttest_1$ mean was 46.56, moving to a $posttest_2$ mean value of 46.52).

While the general tendency of Con subjects to assume a more favorable attitude toward the revision of existing abortion laws might be attributed to extra-experimental factors, such as subjects talking together about the topic, this possibility is minimized by the fact that Con subjects in the 100% Con (17 Statements), 100% Pro (17 Statements), and the 50% Pro/50% Con message conditions did move slightly toward a Con position in the $posttest_1$-$posttest_2$ time period.

The differences between Con subjects and Pro subjects can be speculatively accounted for by relating message effects to the interference theory analysis of verbal learning made by Postman (33) and incorporated into the rationale of this study. According to Postman, results will be influenced by proactive inhibition, the influence of pre-experimental "language habits" (in this case an attitude) on experimental learning. The strength of the pre-experimental "language habit" is relative to the amount of practice of the intended, experimentally induced habit. Weak pre-experimental habits will interfere with experimental learning less than will stronger habits, and the amount of interference will vary with the amount of experimental learning.

It may have been that Con subjects had little previous knowledge of the topic so that 34 statements represented a major proportion of the total number of learning trials experienced by them. Con subjects experiencing only 17 statements favoring or opposing the topic would be more likely to regress to pre-experimental attitude levels than would those experiencing longer messages as the data indicate. In contrast

with the Con subjects' movement toward increased attitude change, the tendency of Pro and Neutral subjects to regress toward pre-experimental levels implies that they may have had more prior knowledge, which subsequently decreased the effectiveness of the Con message conditions to bring about significant pretest to immediate posttest change.

A second trend of message effects that was opposite the predicted trend occurred with the 100% Pro, total reinforcement messages. The prediction was that an increase in the number of Pro statements would result in an increase in the amount of attitude change. Although the differences were not significant for either Neutral subjects or Con subjects experimental treatments, in both of these tests of Hypothesis 2, the 100% Pro (34 Statements) message resulted in less attitude change than the 100% Pro (17 Statements) message.

These observed effects may conceivably be accounted for by the assimilation-contrast theory of Hovland and Sherif (14). These investigators suggest that the relationship between attitude change and the amount of change advocated is curvilinear, rather than linear. Their theory would predict that extreme amounts of advocated change would result in less observed attitude change than would slightly less extreme discrepancies. The assumption is that a subject is willing to assimilate or adapt to messages that do not advocate too extreme a change in response, but that a subject contrasts or resists more extreme advocations.

There is indication that subjects did tend to resist the 34 Statements message more than the 17 statements message. Three Neutral subjects and four Con subjects either did not change or changed in a direction opposite

to that advocated by the 100% Pro (34 Statements) message. In comparison, only one Neutral subject and two Con subjects either did not change or changed in the direction opposite that advocated by the 100% Pro (17 Statements) message. Although this difference in message effects may be attributed to chance, the trend of greater resistance to the 34 statements message by both Neutral subjects and Con subjects does conform to the Hovland and Sherif predictions.

However, the assimilation-contrast theory does not predict the later, $posttest_1$-$posttest_2$ change toward the message-advocated position that occurred with Con subjects in the 100% Pro (34 Statements) message condition. Although the Hovland-Sherif theory does not deal with delayed effects, it would seem reasonable to assume that attitude change observed in a contrasted message condition would regress faster than change observed in an assimilated message condition. Therefore, while the assimilation-contrast theory appears sufficient to account for pretest-$posttest_1$ effects, it is not adequate to account for later changes that occurred with Con subjects.

Another speculative approach provides a means of accounting for both the $posttest_1$ differences between the effects of the two one-sided Pro messages and the $posttest_2$ differences. This approach is based on the general notions of psychological stress theory. (16) Stress theory would apply to this study if it is assumed that the longer message induces a more persistently stressful psychological condition than the shorter message because it advocates the greater amount of change.

A typical finding in studies of the effects of stressful stimuli on behavior is that subjects tend to under-react when the stressor is first introduced and then tend to over-react for a time before "efficient" copying behavior is observed. (21) Stress theory assumes that the periods of under-reaction and over-reaction will increase with increases in the intensity and duration or stress.

The data for the 100% Pro (17 Statements) message and the 100% Pro (34 Statements) are consistent with these assumptions. It appears that Neutral and Con subjects over-reacted ($posttest_1$) to the shorter message, relative to their later ($posttest_2$) responses, while Neutral subjects and Con subjects under-reacted ($posttest_1$) to the longer message, relative to their later ($posttest_2$) responses. If the longer message induced a greater amount of stress, then the period of under-reaction may have persisted beyond the time that $posttest_1$ responses were made.

Relating these findings to stress theory emphasizes a less speculative implication of the data's inconsistencies. The more definite implication is that the time at which measurement of an attitude is made is an important variable affecting the experimental results. Although this variable has been considered in other experiments (e.g., 23, 25), an extensive number of longitudinal studies of attitudes are needed if an understanding of the time-of-measurement variable is to be achieved.

Additional research is also needed regarding the relationship between the amount of change advocated and the amount of change observed. By using five 34 statements messages with the amount of change advocated varied by the ratios of Pro, Neutral, and Con statements used in each message, the findings of this study have provided some clarity regarding

this research area. Previous findings have been based on no more than three messages (Pro, Moderate, and Con) with the amount of advocated change varied by the assumed relative effects of the entire messages. (e.g., 1) In some instances, the advocation of change was even less precisely based on brief indications of a third person's attitude (e.g., a mark on an attitude scale) rather than on the content of persuasive, verbal messages in the usual sense. (13) Additional studies using other topics with message conditions operationally defined consistent with this study would help to clarify the limits of the generalization.

Additional study is also suggested regarding the relationships between an attitude and recall of information relevant to an attitude. In the present study the number of statements in the message appears to be a major variable affecting the resistance to extinction of both the attitude and the learning of relevant information. Significant differences among $posttest_2$ information recall test scores were found only for Pro subjects, with the larger differences existing between the two-sided message and the 17 statements one-sided messages (i.e., 100% Pro or 100% Con). Although equivalent comparisons for Neutral subjects and for Con subjects showed no significant differences, the $posttest_2$ scores for all subjects in 17 statements message conditions were less than $posttest_2$ scores for the two-sided message condition. All 34 statements message conditions, one-sided as well as two-sided, generally showed somewhat larger $posttest_2$ information recall scores than did the shorter message conditions. This general trend seems to indicate that retention is related to total message context. It may be that context (in particular, message length) provides cues regarding the importance attached to the topic

by the message source, or the experimenter, which influence subject's involvement and consequent retention of specific items of content.

Implications for Further Research

In addition to the research suggested above, the following more specific research undertakings would help to clarify the analogy upon which the reported study is based.

(1) Studies utilizing more than one topic in order to provide some means of contrasting amounts of experience contributing to pre-message attitudes would clarify the relationship between pretest and posttest measurements of attitudes. This would probably be best accomplished by using topics that were unfamiliar to subjects and by providing controlled opportunities for them to develop attitudes under different reinforcement and different learning trial conditions: i.e., both amount and type of conditioning would be varied. After such learning, counterconditioning messages could be used, and immediate posttest and delayed posttest measurements obtained.

(2) In arriving at the conclusion regarding the differences in resistance to extinction of one-sided and two-sided messages, prior research has used a one-sided counterargument between an immediate and a delayed posttest. In this study neutral statements were regarded as analogous to non-reinforced learning trials. Pro subjects and Con subjects in the 100% Neutral message condition tended to shift toward less extreme positions, implying some degree of counterconditioning

effectiveness of neutral or non-reinforcing statements. A more explicit test of the attitude-learning analogy of resistance to extinction would be provided by a first phase of reinforced learning (message favoring or opposing the topic) followed by such a non-reinforced, extinction phase (neutral message).

(3) Greater differences in lengths of messages might provide a more sensitive index of learning and regression effects of one-sided and two-sided messages. This study indicates that subjects might have attached little importance to the 17 statements messages, so that effects might be attributed to motivational factors related to their roles as subjects. Although longer messages would not necessarily eliminate differences in motivation, they would provide a more extensive opportunity for subjects to learn the intended response. Any difference in message effects could then be more specifically related to the one-sidedness and two-sidedness of messages.

(4) Additional research is needed regarding the relationship between extinction by counterargument and extinction (forgetting) by the assumed non-reinforcement of the passage of time. This relationship could be tested by dividing subjects in a persuasive message condition into two groups: half of whom receive a counterargument prior to a delayed posttest and half of whom do not. Such comparisons would constitute an analogous testing of Postman's verbal learning paradigm referred to in the rationale. Under such experimental conditions the counterargument could be assumed to constitute additional practice of the pre-experimental "language habit" while the no-counterargument condition would represent a non-practice condition.

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APPENDIX A

EIGHT MESSAGES USED IN ATTITUDE RESEARCH

34 Pro Statements

Abortion laws need revision and updating.

Throughout the United States obsolete abortion laws are compounding human misery and creating social welfare problems. Michigan's abortion statutes of 1846 are examples of laws that are out of touch with 20th century social needs and modern medical knowledge and practice. Like Michigan, most state laws are so blind to human suffering that neither rape nor incest nor any other humanitarian or social reason is ground for abortion. Large numbers of people, however, are beginning to recognize the serious inadequacies of these rigid laws.

These present laws are so inflexible that a Denver, Colorado, housewife who became pregnant by an insane rapist in 1955 was denied an abortion. By restricting legal abortion solely to those few cases where it is necessary to save the life of the mother, our legal system has foolishly ignored the increased ability of medical science to deal with humanitarian problems.

An alarming, and in large part unnecessary, 20% of the pregnancies in this country are ending in fetal loss because our backward laws are hindering proper medical and psychological guidance and counseling. That approximately 60% of the abortions in this country are illegal gives additional indication that our laws are badly out of step with social needs and public opinion.

Whether there are 200,000 abortions each year, which is the lowest plausible estimate, or 1,200,000, which is the highest, a tremendous number of decent citizens are literally forced to behave like criminals.

Our society is dealing with the abortion problem in its most elementary form by abandoning women to the criminal abortionist. This unrealistic legal situation imposes serious dangers to the health and lives of thousands of women. Obviously, such illegal abortions cannot help but be threatening and extremely degrading to normally law-abiding citizens. Yet our judicial system ignores the knowledge that an unwanted, undesirable or harmful pregnancy is a burden, not only for the family, but for society as well.

Current abortion laws provide no means for reducing the number of mentally and physically deformed children born into a life of misery. By improving our abortion laws we could reduce the number of children born with congenital abnormalities. Nor is there any reason for the society to keep producing annual models of mentally retarded parents when it doesn't have to. All such unwanted children continually increase society's problems of mental illness, juvenile delinquency and crime.

We require the unwed, pregnant girl to degrade herself further by seeking criminal abortion when we should be providing concern and help. Strictly because our abortion laws are insensitive to such social needs, self-induced abortion has become the second highest cause of maternal death. Unless we modify these laws, the unhealthy, degrading abortion racket will continue to endanger our society.

The Scandinavian countries, with their well-ordered societies, 30 years ago recognized the wisdom of making their abortion laws somewhat more liberal. Denmark, Sweden and Norway have all instituted abortion laws that provide sensible, humanitarian control of the abortion problem. All three recognize the positive legal and social value of accepting socio-economic conditions as sufficient reasons for legal abortions.

Although a majority of European nations have the same antiquated abortion laws that we do, their courts are beginning to recognize the necessity for improving their laws as the Scandinavian countries have done. In 1948 the Japanese government liberalized its laws in recognition of the serious social disadvantages of uncontrolled illegal abortion practices.

In our society, too, room must be made for more consideration of humanitarian reasons as an additional indication for abortion. We should not continue to expect the committees of doctors in each hospital who must decide the advisability of therapeutic abortion to ignore their 1964 understanding of human need in deference to an outmoded 1846 law. It should not be necessary for an American woman to have to travel to Sweden for an abortion in order to protect her family from the certain burden of a deformed child as the Arizona woman did in 1962.

We have no evidence for believing that the unequivocal legal antipathy to abortion that originally served an ancient Hebrew culture can adequately serve mid-20th century Americans. A reduction of the number of abortions obviously cannot be effected within the socially insensitive framework of existing law. Our present laws are encouraging illegal abortion instead of controlling it. So we will have to expect continued thousands of illegal abortions as long as the laws remain unchanged.

Social progress requires that we work to eliminate the problems and inadequacies these unrealistic laws are imposing on us.

17 Pro Statements

Throughout the United States obsolete abortion laws are compounding human misery and creating social welfare problems. Michigan's abortion statutes of 1846 are examples of laws that are out of touch with 20th century social needs and modern medical knowledge and practice. By restricting legal abortion solely to those few cases where it is necessary to save the life of the mother, our legal system has foolishly ignored the increased ability of medical science to deal with humanitarian problems.

An alarming, and in large part unnecessary, 20% of the pregnancies in this country are ending in fetal loss because our backward laws are hindering proper medical and psychological guidance and counseling. That approximately 60% of the abortions in this country are illegal gives additional indication that our laws are badly out of step with social needs and public opinion.

Whether there are 200,000 abortions each year, which is the lowest plausible estimate, or 1,200,000 which is the highest, a tremendous number of decent citizens are literally forced to behave like criminals.

Current abortion laws provide no means for reducing the number of mentally and physically deformed children born into a life of misery. All such unwanted children continually increase society's problems of mental illness, juvenile delinquency and crime. Strictly because our abortions laws are insensitive to such social needs, self-induced abortion has become the second highest cause of maternal death.

The Scandinavian countries, with their well-ordered societies, 30 years ago recognized the wisdom of making their abortion laws somewhat more liberal. Denmark, Sweden and Norway have all instituted abortion laws that provide sensible, humanitarian control of the abortion problem. Although a majority of European nations have the same antiquated abortion laws that we do, their courts are beginning to recognize the necessity for improving their laws as the Scandinavian countries have done. In 1948 the Japanese government liberalized its laws in recognition of the serious social disadvantages of uncontrolled illegal abortion practices.

In our society, too, room must be made for more consideration of humanitarian reasons as an additional indication for abortion. We should not continue to expect the committees of Doctors in each hospital who must decide the advisability of therapeutic abortion to ignore their 1965 understanding of human need in deference to an outmoded 1846 law. It should not be necessary for an American woman to have to travel to Sweden for an abortion in order to protect her family from the certain burden of a deformed child as the Arizona woman did in 1962.

We have no evidence for believing that the unequivocal legal antipathy to abortion that originally served an ancient Hebrew culture can adequately serve mid-20th century Americans.

17 Pro Statements/17 Neutral Statements

Whether existing laws should be revised or retained without revision is an issue promoting a great deal of debate.

Throughout the United States obsolete abortion laws are compounding human misery and creating social welfare problems. Whether or not a law is obsolete, however, cannot be judged by the date of its enactment. For

example, Arizona's law was passed in 1912 while Michigan's law was passed in 1845. But all state laws are so blind to human suffering that neither rape nor incest nor any other humanitarian or social reason is ground for abortion. These state laws generally define legal abortion as those instances where medical intervention is necessary to save the life of the mother. In most hospitals a committee of doctors decides whether or not a therapeutic abortion is necessary.

The present laws are so inflexible that a Denver, Colorado, housewife who became pregnant by an insane rapist in 1955 was denied an abortion.

An alarming, and in large part unnecessary, 20% of the pregnancies in this country are ending in fetal loss because our backward laws are hindering proper medical and psychological guidance and counseling. The statistics of other nations'fetal loss rates are not easily obtained.

That approximately 60% of the abortions in this country are illegal gives indication that our laws are badly out of step with social needs and public opinion. Whether there are 200,000 abortions each year, which is the lowest plausible estimate, or 1,200,000, which is the highest, a tremendous number of decent citizens are literally forced to behave like criminals.

Although some bookstores a few years ago were willing to stock a book on abortion that had been written and edited by psychiatrists, other bookstores refused to stock it for one reason or another.

Almost universally, our society is dealing with the abortion problem in its most elementary form by abondoning women to the criminal abortionist. This unrealistic legal situation imposes serious dangers to the health and welfare of thousands of women. Of course, disagreements about other prevailing legal situations need our consideration, too. Yet our judicial system has detrimentally ignored the knowledge that an unwanted, undesirable or harmful pregnancy is a burden, not only for the family, but for the society as well.

Current abortion laws provide no means for reducing the number of mentally and physically deformed children born into a life of misery. Every society faces this problem of how to deal with abnormality. Anthropologists contend that abnormality is even defined differently in different cultures. But it should not be necessary for an American woman to have to travel to Sweden for an abortion in order to protect her family from the certain burden of a deformed child as the Arizona woman did in 1962.

Some people consider illegal abortion to be largely a sociological problem while others do not. But almost all people agree that the injuries and deaths from abortion constitute a regrettable loss to society.

Still another consideration is that we unnecessarily force the unwed pregnant girl to degrade herself further by seeking criminal abortion when we should be providing concern and help. Unless we modify our laws, the unhealthy, degrading abortion racket will continue to endanger our society.

Other nations around the world at one time or another must also concern themselves with the issue of retaining or changing abortion laws. In the 1930's Denmark instituted somewhat more liberal abortion laws that provide sensible, humane control of the abortion problem. Some citizens of the country believe that Mexico should consider changing its abortion laws. Japan, in a sensible and practical change in 1948, modified its laws to gain better control over illegal abortion.

Unequivocal moral and legal objection to abortion originated with the Hebrews. Although a majority of European nations have the same antiquated laws that we do, their courts are beginning to recognize the necessity for improving their laws as the Scandinavian countries have done. Whether to revise or to retain abortion laws is a problem which continues to be the concern of more than one nation and for more than one particular time. Reference to the problem may be found in the documents of almost every historical period.

It is important that we understand, however, that self-induced abortion has become the second highest cause of maternal death strictly because our abortion laws are so insensitive to current social needs.

17 Neutral Statements

Whether existing laws should be revised or retained without revision is an issue promoting a great deal of debate.

The judgment of a law's obsolescence cannot be based on the date of its enactment. For example, Arizona's law was passed in 1846. State laws generally define legal abortion as those instances where medical intervention is necessary to save the life of the mother. In most hospitals a committee of Doctors decides whether or not a therapeutic abortion is necessary.

Some people have estimated that 60% of the abortions performed in this country are illegal. Estimates of the number of abortions performed yearly vary from 200,000 to 1,200,000. Approximately 20% of the pregnancies in the United States are said to end in fetal loss. Statistics of other nations' abortion and fetal loss rates are not easily obtained.

In 1962 Sweden granted an abortion to an American woman because there was a chance she would give birth to an abnormal baby. Like Sweden, every society faces the problem of how to deal with abnormality. Anthropologists even contend that different cultures throughout history have defined abnormality differently.

Other nations around the world at one time or another have also concerned themselves with the issue of retaining or changing their statutes governing abortion practices. In the 1930's Denmark instituted somewhat more liberal laws but a majority of European nations retain laws highly similar to those of the U.S. Japan modified its laws to decrease the number of illegal abortions in 1948.

Unequivocal moral and legal objection to abortion originated with the Hebrews. In our society today self-induced abortions, ranked by some as the second highest cause of maternal death, remain a problem for which an impartial solution is yet to be found.

17 Con Statements/17 Pro Statements

Abortion laws need revision and updating.

Throughout the United States obsolete abortion laws are compounding human misery and creating social welfare problems. Most state laws are so blind to human suffering that neither rape nor incest nor any other humanitarian or social reason is ground for abortion.

Although changes in the law have been considered at various times, Michigan citizens have retained the same abortion laws since 1846 as the only sensible means of meeting this social problem. All other states have maintained abortion statutes that basically show the same realistic attitude that Michigan law does.

By restricting legal abortion solely to those few cases where it is necessary to save the life of the mother, our legal system has foolishly ignored the increased ability of medical science to deal with humanitarian problems. That approximately 60% of the abortions in this country are illegal gives indication that our laws are badly out of step with social needs and public opinion.

However, with 20% of all pregnancies already ending in fetal loss, we should be seeking obstetrical means of preserving life rather than legalizing means to destroy it.

Our society is dealing with the abortion problem in its most elementary form by abandoning women to the criminal abortionist. This unrealistic legal situation imposes serious dangers to the health and lives of thousands of women. Obviously, such illegal abortions cannot help but be threatening and extremely degrading to normally law abiding citizens. However, any abortion should be avoided for it will most likely promote serious traumatic aftereffects. Yet our judicial system ignores the knowledge that an unwanted, undesirable or harmful pregnancy is a burden, not only for the family, but for society as well.

We must recognize that abortion tragically goes against basic feminine creativity. Requests for abortions consequently should be viewed as symptoms of serious emotional illness not as acceptable behavior. It is time that we acknowledge that a so-called adult woman who seeks an abortion needs psychiatric help, not surgical elimination of pregnancy.

Our outmoded laws are forcing the unwed, pregnant girl to degrade herself further by seeking criminal abortion when we should be providing concern and help. Strictly because our abortion laws are insensitive to such social needs, self-induced abortion has become the second highest cause of maternal death.

Although Denmark's laws are somewhat more liberal than U.S. abortion laws, the Scandinavian country has failed to accomplish its purpose of reducing the number of illegal abortions. Sweden and Norway both instituted liberal abortion laws that provide sensible, humanitarian control of the abortion problem. But Sweden, with its more liberal regulations has been unable to decrease the rate of illegal abortion. Although a majority of European nations have the same antiquated laws that we do, their courts are beginning to recognize the necessity for improving their laws as the Scandinavian countries have done. However, in 1948, on the other side of the world, Japan liberalized its laws in order to gain better control over illegal abortion and succeeded only in increasing all abortion rates.

Strict indictment against abortion has been and continues to be fundamentally important to our culture since its origination with ancient Hebrew society. On the other hand, room must be made in our society for more consideration of humanitarian reasons as an additional indication for abortion. Of course, the predominant moral and cultural conception of our Judeo-Christian societies is offended by the performance of an abortion to avoid poverty, social disgrace or illegitimacy. And it is true that in our society, permitting an abortion for social convenience seems revoltingly synonymous with barbarianism. Nonetheless, we should not continue to expect the committee of doctors in each hospital who must decide the advisability of therapeutic abortion to ignore their 1964 understanding of human need in deference to an outmoded 1846 law. But a highly important consideration is that liberalized abortion laws will weaken the moral structure of our society. And yet, it should not be necessary for an American woman to have to travel to Sweden for an abortion in order to protect her family from the certain burden of a deformed child as the Arizona woman did in 1962.

A major reason that laws should not be changed, however, is that no one, not even the mother, in the early weeks of her pregnancy, has the ability to judge a baby as unwanted. Another reason is that medical science is completely unable to predict exactly which babies will be abnormal even in such cases as the Arizona woman.

Our present laws must not be changed in the false hope that legalization of abortion could create social improvement. But whether there are 200,000 abortions each year, which is the lowest plausible

estimate, or 1,200,000, which is the highest, there is no doubt that a tremendous number of decent citizens are literally forced to behave like criminals.

17 Con Statements/17 Neutral Statements

Whether existing laws should be revised or retained without revision is an issue promoting a great deal of debate.

Arguments directed toward liberalizing these laws are founded more on fancy than on clear-cut fact. Whether or not a law is obsolete cannot be judged by the date of its enactment. For example, Arizona's law was passed in 1912 while Michigan's law was passed in 1846. The arguments for liberalization fail to state that present laws work highly satisfactorily for any physician who performs a therapeutic abortion in a hospital for ethically justified reasons. In most hospitals a committee of doctors decide whether or not a therapeutic abortion is necessary. State laws generally define legal, therapeutic abortion as those instances where medical intervention is necessary to save the life of the mother.

Abortion must be looked upon as a serious tragedy running counter to the biological stream of life. With 20% of all pregnancies already resulting in fetal loss, we should be seeking obstetrical means of preserving life rather than means to destroy it. Estimates of the number of abortions performed yearly vary from 200,000 to 1,200,000.

Any abortion will promote extremely serious traumatic aftereffects. In fact, the major psychological effects of having an abortion--frustration, hostility and guilt--are exceptionally serious problems warranting extremely cautious control of therapeutic abortion.

It is estimated that 60% of all abortions in this country are illegal. Responsible education and full use of our social resources are the only workable means for controlling the problem, not subversion of our basic laws. Such mature implementation of our educational resources will also eliminate the claim that self-induced abortion is the second highest cause of maternal death while preserving the practical and functional statutes we now have.

Other nations around the world at one time or another must also concern themselves with the issue of retaining or changing abortion laws. Although Denmark's laws, in effect since the 1930's, are somewhat more liberal than U.S. laws, the Scandinavian country has failed to accomplish its purpose of reducing the number of illegal abortions. The Japanese liberalized their laws in 1948 in order to gain better control over illegal abortion and succeeded only in increasing all abortion rates.

Some people consider illegal abortion to be largely a sociological problem while others do not. Almost all people agree that injuries and deaths from abortion constitute a regrettable loss to society.

True humanitarianism defends the rights of the unborn child against the selfish concerns of the present.

Unequivocal moral and legal objection to abortion originated with the Hebrews. Reference to the problem may be found in the documents of almost every historical period. Like the United States, most European nations have found no workable substitute for absolute moral and legal denial of abortion except for protection of life. In our society permitting abortions for any other reason, such as social convenience, seems revoltingly synonomous with barbarianism.

Sweden granted an abortion to an American woman in 1962 because her baby stood a chance of being born defective. Medical science, however, is absolutely unable to predict whether a particular baby will or will not be congenitally abnormal. Every society faces the problem of how to deal with abnormality. There is no advantage for our society in permitting abortions to destroy the unborn genius while attempting to eliminate the retarded.

Anthropologists contend that abnormality has been defined differently in different cultures throughout history. No one, not even the mother in the early weeks of her pregnancy, has the ability to judge a baby as unwanted.

Whether or not abortion laws should be revised or retained has prompted the writing of many articles and books. Despite the interest, abortions remain a problem for which an impartial solution is yet to be found.

We must constantly remember, nonetheless, that our belief in maximum opportunity for all includes maximum opportunity for all our future citizens, too.

17 Con Statements

Arguments directed toward liberalizing existing abortion laws are founded more on fancy than on clear-cut fact. These arguments fail to state that the present laws work highly satisfactorily for any physician who performs a therapeutic abortion in a hospital for ethically justified reasons. The committees of doctors who make decisions regarding abortions have little difficulty in meeting the law.

All states recognize that the only really justifiable reason for permitting an abortion is to save the life of the mother. Michigan citizens, for example, have realistically retained this basic abortion law since 1846 as the only practical means of meeting this social problem.

Whether there are 200,000 abortions each year, which is a highly plausible estimate, or 1,200,000 which is the highest estimate, the means of improving the situation does not reside in legislating liberalized laws. With 20% of all pregnancies already resulting in fetal loss, we should be seeking obstetrical means of preserving life rather than means to destroy it.

If we intend to reduce the number of illegal abortions from its 60% rate of all abortions, we must do it by responsible education, not by destroying basic laws. Responsible education and full use of our social resources will also eliminate the claim that self-induced abortion is the second highest cause of maternal death without subverting our laws.

Although Denmark's abortion laws are somewhat more liberal than U.S. abortion laws, the Scandinavian country has failed to accomplish its purpose of reducing the number of illegal abortions. The Japanese also liberalized their laws in order to gain better control over illegal abortion and succeeded only in increasing all abortion rates.

Like the United States, most European nations have found no workable substitute for unequivocal moral and legal denial of abortion except for protection of life. Strict indictment against abortion has been and continues to be fundamentally important to our culture since its origination with ancient Hebrew society.

No one, not even the mother, in the early weeks of her pregnancy, has the ability to judge a baby as unwanted. Medical science is absolutely unable to predict what babies will be congenitally abnormal even in such cases as the Arizona woman's abortion in Sweden in 1962 as a prevention of the birth of a possibly deformed baby. There is no advantage for our society in permitting abortions to destroy the unborn genius while attempting to eliminate the retarded.

Our belief in maximum opportunity for all includes maximum opportunity for all our future citizens, too.

34 Con Statements

Existing abortion laws are adequate and accurate expressions of majority belief and opinion.

Arguments directed toward liberalizing these laws are founded more on fancy than on clear-cut fact. These arguments fail to state that the present laws work highly satisfactorily for any physician who performs a therapeutic abortion in a hospital for ethically justified reasons. Obstetrical medical practice has been able to operate honestly and adequately within the framework of current abortion laws. The committees of doctors who make decisions regarding abortions have little difficulty in meeting the law.

All states recognize that the only really justifiable reason for permitting an abortion is to save the life of the mother. Michigan citizens, for example, have realistically retained this basic abortion law since 1846 as the only practical means of meeting this social problem. Forty-four other states maintain abortion statutes that show the same realistic attitude that Michigan law does.

Abortion must be looked upon as a serious tragedy running counter to the biological stream of life. With 20% of all pregnancies already resulting in fetal loss, we should be seeking obstetrical means of preserving life rather than means to destroy it.

We must recognize that abortion is destructive of basic feminine creativity. Requests for abortions consequently must be viewed as symptoms of emotional illness. It is time that we acknowledge that a so-called adult woman who seeks an abortion needs psychiatric help, not surgical elimination of pregnancy.

Any abortion will promote extremely serious traumatic after-effects. In most instances both the individual and the situation are actually aggrevated rather than remedied by abortion. The major psychological effects of having an abortion--frustration, hostility, and guilt--are exceptionally serious problems warranting extremely cautious control of therapeutic abortion.

Whether there are 200,000 abortions each year, which is a highly plausible estimate, or 1,200,000 which is the highest estimate, the means of improving the situation does not reside in legislating liberalized laws. It simply is not reasonable to pretend that changing abortion laws will solve any of our nation's mental health or socio-economic problems.

If we intend to reduce the number of illegal abortions from its present 60% rate of all abortions, we must do it by responsible education, not by destroying basic laws. Responsible education and full use of our social resources will also eliminate the claim that self-induced abortion is the second highest cause of maternal death without subverting our laws.

Although Denmark's abortion laws are somewhat more liberal than U.S. abortion laws, the Scandinavian country has failed to accomplish its purpose of reducing the number of illegal abortions. Nor has Sweden, with its more liberal regulations, been able to decrease the rate of illegal abortion. The Japanese also liberalized their laws in order to gain better control over illegal abortion and succeeded only in increasing all abortion rates.

Like the United States, most European nations have found no workable substitute for unequivocal moral and legal denial of abortion except for protection of life. Strict indictment against abortion has been and continues to be fundamentally important to our culture since its origination with ancient Hebrew society. The predominant moral and cultural conception of our Judeo-Christian societies is offended by the performance of an abortion to avoid poverty, social disgrace or illegitimacy. In our society permitting abortions for social convenience seem revoltingly synonymous with barbarianism.

Liberalizing our abortion laws would obviously weaken the moral structure of our society.

Our belief in maximum opportunity for all includes maximum opportunity for all our future citizens, too. True humanitarianism defends the rights of the unborn child against the selfish concerns of the present. There is no advantage for our society in permitting abortions to destroy the unborn genius while attempting to eliminate the retarded.

No one, not even the mother, in the early weeks of her pregnancy, has the ability to judge a baby as unwanted. Medical science is absolutely unable to predict what babies will be congenitally abnormal even in such cases as the Arizona woman's abortion in Sweden in 1962 as a prevention of the birth of a possibly deformed baby.

Tochange the abortion laws would create more new problems and alleviate none of the old.

APPENDIX B

Name _____ Project Number 538

Student Number _____ Phase 01

Course Instructor _____ Subject Number ___

INSTRUCTIONS:

Please print your name, student number, and the name of your instructor in the upper left hand corner of this page in the spaces provided. This information is absolutely necessary if you are to receive course credit for participation in this study. Please do it now before reading further instructions.

The purpose of this study is to measure the way people judge topics of oral and written messages by having each person judge one topic on a series of descriptive scales. After the person has judged the topic on the descriptive scales, a second task is to answer some multiple choice information questions about the topic. Remember that your first task is to judge the topic on each of the descriptive scales in order.

Here is how you are to use these scales:

If you feel that the topic at the top of the page is very closely related to one end of the scale, you should place your check mark as follows:

Fair __X__:_____:_____:_____::_____:_____:_____:_____Unfair

OR

Fair _____:_____:_____:_____::_____:_____:_____:__X__Unfair

If you feel that the topic is quite closely related to one end of the scale or the other (but not extremely), you should place your check mark as follows:

Strong _____:__X__:_____:_____::_____:_____:_____:_____Weak

OR

Strong _____:_____:_____:_____::_____:_____:__X__:_____Weak

If the topic seems related (but not closely related) to one side as opposed to the other side, then you should check as follows:

Passive _____:_____:_____:_____::_____:_X___:_____:_____Active

OR

Passive _____:_____:__X__:_____::_____:_____:_____:_____Active

If the topic seems only slightly related, or very minimally related, to one end as opposed to the other end of the scale, you should place your check mark as follows:

Safe _____:_____:_____:__X__::_____:_____:_____:_____Dangerous

OR

Safe _____:_____:_____:_____::__X__:_____:_____:_____Dangerous

The direction toward which you check, of course, depends upon which of the two ends of the scale seems most characteristic of the topic you are judging.

If you consider both sides of the scale to be exactly equally associated with the topic, or if you consider the scale to be completely irrelevant, so that you prefer not to indicate even a minimal relationship with one end of the scale or the other, you may write the word "irrelevant" beside the scale.

Be sure to put a check mark somewhere along each scale (or write "irrelevant" if you do not wish to check a space). Put your check mark within the spaces, not on the dots separating the spaces. Put one, and only one, check mark on each scale. Do not omit any.

INSTRUCTIONS FOR MULTIPLE CHOICE TEST:

Your second task is to answer a series of multiple choice test items on the following pages. The multiple choice items are similar to this example:

The only state legislature currently giving official consideration to a change in the abortion laws is

1. California.
2. Maryland.
3. Texas.
4. Idaho.
5. New Jersey

Answer: 1

Please note that to the right of each test item an answer space is provided. Regardless of how certain or how uncertain you are about your answer, write the number of the choice you select in the appropriate blank in the right hand column. Please answer each and every question.

LEGALIZED ABORTION

Negative	_____:_____:_____:_____::_____:_____:_____:_____	Positive
For	_____:_____:_____:_____::_____:_____:_____:_____	Against
Good	_____:_____:_____:_____::_____:_____:_____:_____	Bad
Reject	_____:_____:_____:_____::_____:_____:_____:_____	Accept
Dislike	_____:_____:_____:_____::_____:_____:_____:_____	Like
Favor	_____:_____:_____:_____::_____:_____:_____:_____	Oppose

1. The proportion of pregnancies resulting in fetal loss is estimated to be about

   (1) 1%.
   (2) 5%.
   (3) 10%.
   (4) 20%.
   (5) 40%. (29)_____

2. Michigan laws on abortion have not been changed since

   (1) 1846.
   (2) 1876.
   (3) 1906.
   (4) 1926.
   (5) 1956. (30)_____

3. The laws pertaining to abortion in most states permit an abortion if it is necessary

   (1) to save the mother's life.
   (2) to save the mother's life, or if the pregnancy results from rape.
   (3) to save the mother's life, or if the pregnancy results from rape, or if it results from incest.
   (4) to save the mother's life or to protect her sanity.
   (5) to save the mother's life or if it is necessary to protect her sanity, or if the pregnancy results from rape or incest. (31)_____

4. Abortion laws in Denmark in comparison with abortion laws in the United States are generally acknowledged to be

   (1) extremely liberal.
   (2) somewhat more liberal.
   (3) no different.
   (4) somewhat more conservative.
   (5) extremely conservative. (32)_____

5. The percentage of abortions performed in this country that are illegal is estimated to be approximately

   (1) 20% of all abortions.
   (2) 40% of all abortions.
   (3) 60% of all abortions.
   (4) 80% of all abortions.
   (5) 90% of all abortions. (33)_____

6. The total number of abortions performed yearly in the United States is estimated to be between

   (1) 100,000 and 200,000.
   (2) 200,000 and 500,000.
   (3) 500,000 and 1,200,000.
   (4) 1,000,000 and 2,000,000.
   (5) 1,700,000 and 3,000,000. (34)_____

7. In comparison with the United States, the abortion laws of a majority of European nations are

   (1) extremely liberal.
   (2) somewhat more liberal.
   (3) no different.
   (4) somewhat more conservative.
   (5) extremely conservative. (35)_____

8. In 1962 an Arizona woman, who had unknowingly taken a dangerous drug and consequently expected her unborn child to be deformed, was permitted to have her pregnancy aborted by legal authorities in

   (1) Arizona.
   (2) Nevada.
   (3) Japan.
   (4) Sweden.
   (5) Switzerland. (36)_____

9. Permission for most therapeutic abortions in the United States is decided by

   (1) a citizen jury.
   (2) the doctor whose patient requires it.
   (3) the state's attorney general.
   (4) a committee of doctors.
   (5) a committee of doctors, ministers and social workers. (37)_____

10. In 1948 Japan changed its laws on abortion to

   (1) increase government control of medical practices.
   (2) decrease the high cost charged for abortion.
   (3) increase the birth rate.
   (4) decrease the number of illegal abortions.
   (5) increase the legal reasons for granting abortion. (38)_____

11. In our cultural heritage the absolute moral and legal objection to abortion originated with the

(1) Romans.
(2) English.
(3) Greeks.
(4) Puritans.
(5) Hebrews. (39)_____

12. Of all the causes of maternal deaths, self-induced abortion has been found to rank

(1) first.
(2) second.
(3) third.
(4) fourth.
(5) fifth. (40)_____

The following three pages (pp.105-107) are copies of the instructions regarding reading the experimental message and marking the attitude scales at the time of the immediate posttest. The messages are presented in Appendix A. The attitude measuring instrument was the same for $posttest_1$ as for the pretest and may be found above in the pretest booklet.

The fourth page below (p. ____) is a copy of the instructions regarding the marking of the information recall test at the time of the immediate posttest. The information recall test with its page of instructions was presented to the subjects as a second $posttest_1$ booklet. The test was the same for $posttest_1$ as for the pretest and may be found above in the pretest booklet.

INSTRUCTIONS:

We appreciate your willingness to assist us with this study. In order for you to be certain of receiving credit for participation, would you double check that your name and student number are correctly recorded on the first page?

Perhaps you recall that a few weeks ago you were asked to judge the topic of legalized abortion by marking a series of descriptive scales and to mark a short information test about the subject. This topic is one of continued public importance, so, quite understandably, certain agruments have been presented by various sources concerning the issue of whether existing laws relevant to the topic should be modified or retained.

On the next few pages you will find a summary of some of these arguments. Please read all of the statements since each statement is presented as a representative expression of the arguments concerning this topic.

INSTRUCTIONS:

Now that you have read the representative statements your next task is to judge the topic of legalized abortion on a series of descriptive scales similar to the scales you marked a few weeks ago. Be certain that you know the correct procedure for marking.

HERE IS HOW YOU ARE TO USE THESE SCALES:

If you feel that the topic at the top of the page is very closely related to one end of the scale, you should place your check mark as follows:

Fair __X__:_____:_____:_____::_____:_____:_____:_____ Unfair

OR

Fair _____:_____:_____:_____::_____:_____:_____:__X__ Unfair

If you feel that the topic is quite closely related to one end of the scale or the other (but not extremely), you should place your check mark as follows:

Strong _____:__X__:_____:_____::_____:_____:_____:_____ Weak

OR

Strong _____:_____:_____:_____::_____:_____:__X__:_____ Weak

If the topic seems related (but not closely related) to one side as opposed to the other side, then you should check as follows:

Passive _____:_____:_____:_____::_____:__X__:_____:_____ Active

OR

Passive _____:_____:__X__:_____::_____:_____:_____:_____ Active

If the topic seems only slightly related, or very minimally related, to one end as opposed to the other end of the scale, you should place your check mark as follows:

Safe _____:_____:_____:__X__::_____:_____:_____:_____ Dangerous

Safe _____:_____:_____:_____::__X__:_____:_____:_____ Dangerous

The direction toward which you check, of course, depends upon which of the two ends of the scale seems most characteristic of the topic you are judging.

If you consider both sides of the scale to be exactly equally associated with the topic, or if you consider the scale to be completely irrelevant, so that you prefer not to indicate even a minimal relationship with one end of the scale or the other, you may write the word "irrelevant" beside the scale.

Be sure to put a check mark somewhere along each scale (or write "irrelevant" if you do not wish to check a space.) Put your check mark within the spaces, not on the dots separating the spaces. Put one, and only one, check mark on each scale. DO NOT OMIT ANY.

INSTRUCTIONS:

There is one more task for you to complete today.

However, the next task requires your receiving another booklet. Please wait quietly until everyone is finished with the task you have just completed. It is important that you do not discuss what you have just read with your neighbors. As soon as everyone is through with this booklet, it will be picked up and the next task booklet will be distributed. Thanks for your cooperation and patience.

Name _____ Project Number 538

Student Number _____ Phase 02

Instructor _____ Subject Number ___

INSTRUCTIONS:

Please print your name, student number, and the name of your instructor in the upper left hand corner of this page in the spaces provided.

This second task is to answer a series of multiple choice test items on the following pages. The multiple choice items are similar to this example:

The only state legislature currently giving official consideration to a change in the abortion laws is

1. California.
2. Maryland.
3. Texas.
4. Idaho.
5. New Jersey.

Answer: 1

Please note that to the right of each test item an answer space is provided. Regardless of how certain or how uncertain you are about your answer, write the number of the choice you select in the appropriate blank in the right hand column. Please answer each and every question.

The following three pages (pp. 110-112) are a copy of the instructions presented to subjects in the delayed posttest booklet. The attitude measuring instrument and the information recall test were the same for $posttest_2$ as for the pretest. Copies of these instruments may be found in the pretest booklet above.

Name _____ Project Number 538

Student Number _____ Phase ___

Instructor _____ Subject Number ___

INSTRUCTIONS:

Once again it is necessary that you print your name, student number, and the name of your instructor in the upper left hand corner of this page in the spaces provided. Your participation has been most helpful to this point and the remaining tasks require only a few minutes of time.

You undoubtedly recall that the purpose of this study is to measure the way people judge topics by having each person judge one topic on a series of descriptive scales. After the person has judged the topic on the descriptive scales, a second task is to answer multiple choice information questions about the topic. Remember that your first task is to judge the topic on each of the descriptive scales in order. Be certain that you know the correct procedure for marking the scales.

Here is how you are to use these scales:

If you feel that the topic at the top of the page is very closely related to one end of the scale, you should place your check mark as follows:

Fair __X__:_____:_____:_____::_____:_____:_____:_____ Unfair

OR

Fair _____:_____:_____:_____::_____:_____:_____:__X__ Unfair

If you feel that the topic is quite closely related to one end of the scale or the other (but not extremely), you should place your check mark as follows:

Strong _____:__X__:_____:_____::_____:_____:_____:_____ Weak

OR

Strong _____:_____:_____:_____::_____:_____:__X__:_____ Weak

If the topic seems related (but not closely related) to one side as opposed to the other side, then you could check as follows:

Passive _____:_____:_____:_____::_____:__X__:_____:_____ Active

OR

Passive _____:_____:_____:_____::__X__:_____:_____:_____ Active

If the topic seems only slightly related, or very minimally related, to one end as opposed to the other end of the scale, you should place your check mark as follows:

Safe _____:_____:_____:__X__::_____:_____:_____:_____ Dangerous

OR

Safe _____:_____:_____:_____::__X__:_____:_____:_____ Dangerous

The direction toward which you check, of course, depends upon which of the two ends of the scale seems most characteristic of the topic you are judging.

If you consider both sides of the scale to be exactly equally associated with the topic, or if you consider the scale to be completely irrelevant, so that you prefer not to indicate even a minimal relationship with one end of the scale or the other, you may write the word "irrelevant" beside the scale.

Be sure to put a check mark somewhere along each scale (or write "irrelevant" if you do not wish to check a space). Put your check mark within the spaces, not on the dots separating the spaces. Put one, and only one, check mark on each scale. Do not omit any.

INSTRUCTIONS FOR MULTIPLE CHOICE TEST:

Your second task is to answer a series of multiple choice test items on the following pages. The multiple choice items are similar to this example:

The only state legislature currently giving official consideration to a change in the abortion laws is

(1) California.
(2) Maryland.
(3) Texas.
(4) Idaho.
(5) New Jersey. Answer: 1

Please note that to the right of each test item an answer space is provided. Regardless of how certain or how uncertain you are about your answer, write the number of the choice you select in the appropriate blank in the right hand column. Please answer each and every question.

APPENDIX C

Table 30 Pretest Minus $Posttest_1$ and $Posttest_1$ Minus $Posttest_2$ Difference Score Means and Standard Deviations of Attitude Test Responses of Eight Message Conditions for Neutral Subjects Experimental Treatment.

Message Conditions	(N)	Pretest-$Post_1$ mean/s.d.	$Post_1$-$Post_2$ mean/s.d.
100% Con (34 State.)	(16)	3.26 7.03	-4.06 7.27
100% Con (17 State.)	(16)	.69 10.96	1.75 9.52
50% Con/50% Neutral	(16)	4.31 8.46	-2.13 6.81
100% Neutral	(16)	-.13 11.53	-1.38 7.59
50% Pro/50% Con	(16)	-5.13 5.01	1.63 6.20
50% Pro/50% Neutral	(16)	-7.63 6.94	2.63 3.27
100% Pro (17 State.)	(16)	-12.06 8.13	2.38 3.95
100% Pro (34 State.)	(16)	-7.69 6.66	1.69 5.93

Table 31 Pretest Minus $Posttest_1$ and $Posttest_1$ Minus $Posttest_2$ Difference Score Means and Standard Deviations of Attitude Test Responses Eight Message Conditions for Con Subjects Experimental Treatment

Message Conditions	(N)	$Pretest-Post_1$ mean/s.d.	$Post_1-Post_2$ mean/s.d.
100% Pro (34 State.)	(16)	-12.19 15.22	-4.25 10.90
100% Pro (17 State.)	(16)	-16.25 17.35	3.81 7.30
50% Pro/50% Neutral	(16)	-11.75 16.58	-.19 1.42
50% Pro/50% Con	(16)	-8.25 11.76	1.00 3.14
100% Neutral	(16)	-9.75 12.12	-.19 10.26
50% Con/50% Neutral	(16)	-6.13 12.15	-3.19 15.10
100% Con (17 State.)	(16)	1.19 2.86	.13 3.82
100% Con (34 State.)	(16)	0 4.43	2.88 6.02

Table 32 Pretest Minus Posttest$_1$ and Posttest$_1$ Minus Posttest$_2$ Difference Score Means and Standard Deviations of Attitude Test Responses for Eight Message Conditions for Pro Subjects Experimental Treatment.

Message Conditions	(N)	Pretest-Post$_1$ mean/s.d.	Post$_1$-Post$_2$ mean/s.d.
100% Con (34 State.)	(16)	8.31 15.59	-1.00 4.77
100% Con (17 State.)	(16)	4.13 11.04	-1.50 4.64
50% Con/50% Neutral	(16)	1.88 8.06	.19 2.90
50% Con/50% Pro	(16)	.44 4.52	-.50 5.79
100% Neutral	(16)	3.31 8.65	-1.25 5.23
50% Pro/50% Neutral	(16)	-1.88 4.72	.69 3.92
100% Pro (17 State.)	(16)	-.63 3.34	3.38 9.94
100% Pro (34 State.)	(16)	-1.50 3.39	.31 2.39

Table 33 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations of Attitude Test Scores for Eight Message Conditions for Neutral Subjects Experimental Treatment

Message Conditions	(N)	Pretest mean/s.d.	$Posttest_1$ mean/s.d.	$Posttest_2$ mean/s.d.
100% Con (34 State.)	(16)	32.56 6.45	29.25 9.85	33.31 9.50
100% Con (17 State.)	(16)	31.88 8.00	31.19 12.52	29.44 13.11
50% Con/ 50% Neutral	(16)	33.63 7.43	31.31 9.73	33.44 8.37
100% Neutral	(16)	30.56 7.85	30.69 12.02	32.06 9.46
50% Pro/50% Con	(16)	32.25 7.95	38.38 9.53	36.81 10.90
50% Pro/50% Neutral	(16)	33.00 6.81	40.63 5.40	38.00 7.08
100% Pro (17 State.)	(16)	31.13 6.81	43.19 6.67	40.81 7.54
100% Pro (34 State.)	(16)	33.38 4.75	41.06 4.70	39.38 6.83

Table 34 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations Of Attitude Test Scores for Eight Message Conditions for Con Subjects Experimental Treatment.

Message Conditions	(N)	Pretest mean/s.d.	$Posttest_1$ mean/s.d.	$Posttest_2$ mean/s.d.
100% Pro (34 State.)	(16)	10.19 4.52	22.38 16.08	26.63 17.45
100% Pro (17 State.)	(16)	10.19 3.04	26.44 17.73	22.63 15.92
50% Pro/50% Neutral	(16)	10.25 3.42	22.00 17.84	22.19 18.16
50% Pro/ 50% Con	(16)	11.06 3.87	19.31 11.54	18.31 11.73
100% Neutral	(16)	8.94 3.84	18.69 12.29	18.88 10.84
50% Con 50% Neutral	(16)	8.25 4.33	14.56 11.52	17.75 16.84
100% Con (17 State.)	(16)	10.69 4.05	9.50 4.00	9.38 3.95
100% Con (34 State.)	(16)	10.50 3.48	10.50 3.63	13.38 6.10

Table 35 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations of Attitude Test Scores for Eight Message Conditions for Pro Subjects Experimental Treatment.

Message Conditions	(N)	Pretest mean/s.d.	$Posttest_1$ mean/s.d.	$Posttest_2$ mean/s.d.
100% Con (34 State.)	(16)	47.44	39.63	40.63
		4.60	14.59	12.78
100% Con (17 State.)	(16)	46.06	41.94	43.44
		4.40	11.46	10.42
50% Con/50% Neutral	(16)	48.13	46.25	46.06
		3.38	8.07	7.21
50% Pro/50% Con	(16)	48.94	48.50	49.00
		4.73	4.23	4.90
100% Neutral	(16)	47.63	44.31	45.56
		2.99	9.19	8.80
50% Pro/50% Neutral	(16)	47.56	49.44	48.75
		3.86	5.42	4.84
100% Pro (17 State.)	(16)	51.00	51.63	48.25
		2.78	2.68	10.90
100% Pro (34 State.)	(16)	49.31	50.81	50.50
		4.29	3.78	3.37

Table 36 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations of Information Recall Test Scores for Eight Message Conditions for Neutral Subjects Experimental Treatment.

Message Conditions	(N)	Pretest mean/s.d.	$Posttest_1$ mean/s.d.	$Posttest_2$ mean/s.d.
100% Con (34 State.)	(16)	3.38 1.20	9.25 1.84	8.19 1.80
100% Con (17 State.)	(16)	4.31 1.20	8.56 1.75	7.44 1.90
50% Con/50% Neutral	(16)	4.19 1.97	8.50 1.80	7.25 1.69
100% Neutral	(16)	3.75 1.84	9.38 1.71	6.69 1.85
50% Pro/50% Con	(16)	4.31 1.25	10.00 1.27	8.75 1.65
50% Pro/50% Neutral	(16)	4.38 2.25	9.19 1.60	7.69 1.54
100% Pro (17 State.)	(16)	4.63 1.46	8.31 1.89	6.88 1.69
100% Pro (34 State.)	(16)	3.38 2.00	8.38 2.36	7.19 2.48

Table 37 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations of Information Recall Test Scores for Eight Message Conditions for Con Subjects Experimental Treatment.

Message Conditions	(N)	Pretest mean/s.d.	Posttest mean/s.d.	Posttest mean/s.d.
100% Pro (34 State.)	(16)	4.44 1.50	8.19 2.32	7.50 2.13
100% Pro (17 State.)	(16)	4.25 1.13	8.50 2.00	7.38 1.59
50% Pro/50% Neutral	(16)	3.94 1.14	8.50 2.19	7.50 2.78
50% Pro/50% Con	(16)	4.25 1.61	9.13 1.89	8.25 1.69
100% Neutral	(16)	3.56 1.75	9.13 1.93	7.00 2.53
50% Con/50% Neutral	(16)	3.88 1.93	9.19 1.42	7.06 2.44
100% Con (17 State.)	(16)	4.19 1.17	8.69 1.25	7.06 2.38
100% Con (34 State.)	(16)	3.63 1.09	8.81 2.01	6.69 2.55

Table 38 Pretest, $Posttest_1$, and $Posttest_2$ Means and Standard Deviations of Information Recall Test Scores for Eight Message Conditions for Pro Subjects Experimental Treatment.

Message Conditions	(N)	Pretest mean/s.d.	$Posttest_1$ mean/s.d.	$Posttest_2$ mean/s.d.
100% Con (34 State.)	(16)	4.50 1.93	8.94 1.57	8.06 1.44
100% Con (17 State.)	(16)	4.56 1.75	8.44 1.21	6.13 1.82
50% Con/50% Neutral	(16)	3.88 1.50	9.13 1.86	7.19 1.91
50% Con/50% Pro	(16)	3.63 1.71	9.88 1.78	8.88 1.41
100% Neutral	(16)	4.25 1.39	9.50 1.55	7.81 2.43
50% Pro/50% Neutral	(16)	4.88 2.13	9.75 1.53	8.75 1.92
100% Pro (17 State.)	(16)	4.31 1.54	8.94 1.73	6.56 1.79
100% Pro (34 State.)	(16)	3.38 1.36	8.13 1.46	7.63 1.86