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Attitude Change in Relation to the Primacy-Recency Problem and Retention-Acceptance Factors

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ATTITUDE CHANGE IN RELATION TO THE PRIMACY-RECENCY PROBLEM AND RETENTION-ACCEPTANCE FACTORS

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This Thesis submitted by Barry L. Johnson in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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ABSTRACT

In attempting to persuade people, it is still not clear whether information presented first (primacy) or information presented last (recency) is more influential. Miller and Campbell (1959) found a primacy effect when they utilized a one week delay prior to obtaining a measurement with their post-test. They also obtained a measure of retention and found that this did not account for the attitude change. They agreed with Hovland (1957) that acceptance factors might be affecting the final opinion change.

This study attempted to clarify the role played by retention and acceptance factors on primacy-recency effects. A one week delay was also incorporated into this experiment. The topic of communication was the University's Pass-Fail Grading System. The communications consisted of mimeographed pro and con statements. A Pass-Fail Attitude Scale was developed and used as both the pre-test and the post-test. The subjects took the pre-test, read the communications, and completed the post-test either immediately or after a one week delay. Measures of retention and acceptance were then obtained. Thus, the data consisted of mean scores on the Pass-Fail Attitude Scale and indexes of retention and acceptance.

Analysis of variance was used to assess the effects of the treatment conditions. The expected recency effect under immediate

measurement was not found nor was there a primacy effect under the delayed measurement condition. Correlation coefficients were computed for the Indexes of Recall and Acceptance with the post-test scores. It was found that Recall correlated .09 with post-test scores whereas Acceptance correlated .46 with post-test scores.

CHAPTER I

INTRODUCTION

Attempts at persuasive communication in everyday life are probably more frequent, complex and powerful now than at any time in the past. Because there are more people in the world today and due to the rapid technological and scientific advancements being made, the average man is no longer capable of keeping up with or understanding many of the complex developments which effect his life. Hence, he often relies on the mass media or the opinion of "experts" to help him keep abreast of current developments.

Persuasion and attitude change are topics of much social-psychological research. A sizable volume of research exists on different aspects of this area. One aspect marked by considerable research that is still unclear is the primacy-recency problem. In attempting to persuade people, it is still not clear whether information presented first (primacy) or information presented last (recency) is more influential in bringing about opinion change.

Lund's (1925) formulation of the Law of Primacy stimulated a great deal of research in this area. As results have been contradictory, efforts have been directed at trying to establish the conditions under which primacy effects could be expected.

Luchins (1958) felt that primacy effects could only be obtained when the subject matter was unfamiliar to the subjects. He presented information describing an unknown person to his subjects. Using this procedure, he obtained evidence for primacy effects.

Thomas, Webb, and Tweedie (1961) conducted a similar study and did not find any evidence for primacy effects. They reasoned that existing attitudes toward the topic must also be considered an important variable.

Miller and Campbell (1959) indicated that there must be a time interval between exposure to the communications and the time that the measurements are obtained. They stated that a one week delay is essential to allow primacy effects to become apparent. They also felt that acceptance factors might be operating in some fashion to bring about attitude change.

This study will attempt to further clarify the importance of retention and acceptance factors on attitude change. The effects of delayed measurement on primacy-recency will also be explored.

CHAPTER II

REVIEW OF LITERATURE

Among the early studies on the effects of primacy and recency was the work of Lund (1925). He felt that a person's ideas and beliefs were a very integral part of one's ego and that they were maintained, in part, because of a desire for consistency. Prior to the time that Lund started experimenting with persuasive communications, it was felt that a communication was the most effective when it began at a rather weak level and then gradually built up to a climactic finish. Lund selected three propositions with each representing a differing amount of emotionality to his subjects. He obtained scores on a pre-test and computed the average ratings for the three propositions. After the pre-tests were administered he gave two groups pro and con arguments, but in different order; one group received pro then con communications while another group received con and then pro communications. After each communication, a post-test was given. Subjects were not aware that a second communication was to follow. The communications were on mimeographed paper and read by the subjects. Lund found that the communication coming first had more influence on the post-test belief scale regardless of whether the communication was pro or con. Lund took this as evidence for a primacy effect and hypothesized that the reason for it could be found by looking at how beliefs originate. He

indicated that a possible origin of beliefs and their desirability to the individual may be found in the amount of contentment and the feeling of stability and adjustment the beliefs yield. He further indicated that this leads to belief consolidation and to a certain amount of unquestioning acceptance which is necessary for maintaining social uniformity. Lund emphasized that the act of committing one's self to a position as on the first post-test had the effect of solidifying one's position. Lund felt that people become members of a political party not because of paternal affiliation but because they first become familiar with the beliefs and the defenses of beliefs of their parents. This type of theorizing offers one explanation of why people are prejudiced against certain minority groups even after experience and education should discourage prejudicial feelings. People are prejudiced because in all likelihood, the first attitudes which they encountered in terms of a particular minority group were derogatory. Thus, Lund advocated that primacy occurred because of an individual's need to appear consistent in his beliefs as this maintained ego strength and also to avoid negative social sanctions. Lund's findings led to a great deal of research with emphasis being placed on determining the conditions under which the primacy effect would occur.

Interest in primacy effects decreased until Cromwell (1950) conducted an experiment and found evidence supporting recency effects. There was a major difference between Lund and Cromwell's study, however, in that Cromwell did not administer post-tests until after both communications had been presented, thus eliminating Lund's committment factor.

Hovland sparked experimentation again in 1957, when he edited the book, The Order of Presentation in Persuasion. Hovland replicated Lund's study, but added another group who did not receive the post-test until after both communications were presented. Hovland found no evidence for primacy under any of the conditions. He explained his failure to confirm Lund's findings by indicating that there may have been differences in the conditions of learning. In Lund's study, the Experimenter was the class instructor, while in Hovland's study, the communicator was a person from outside the school system. Hovland also felt that "acceptance" factors (students accepted first communication more readily as they felt it was being "sponsored" by the instructor) may have led to the primacy effect. Hovland also examined the effects of private and public committment after hearing only one side of a communication. He found no evidence for effect of private committment but found that when subjects made public committments, this tended to "freeze" their views and made them resistant to influence by the second communication. This again supports the idea that a person has a need to maintain consistency in his beliefs because of the negative social repercussions resulting from changing positions on a topic.

Luchins (1958) studied the effects of "unfamiliarity" and opinion change. He did this by presenting two blocks of information describing an unknown person. One block was descriptive of an introverted person and the other of an extrovert. After hearing both blocks, subjects were asked to do one of three things: to select adjectives indicating their impressions of the person, or to write brief personality descriptions or to make predictions about future

behavior of the unknown person. A primacy effect was found with all three methods and over one-third of the subjects indicated that they were unaware of any inconsistencies between the two blocks of information. Luchins explains primacy effects by using a "set" interpretation in that initial descriptions of a person influence the later opinion of subjects in much the same way that initial solutions to a problem effect later attempts to solve problems. Other studies have also indicated that primacy is less effective when the two sides of an issue are presented by different communicators. The studies conducted by Lund and Luchin used only one communicator whereas Hovland used a different person for each communication. The work of Luchin supports the view that the nearer one comes to achieving primacy in the sense of first presentation of unfamiliar material, the more likely one is to obtain primacy effects.

A subject's expectation that another side of an issue will be presented is also a factor to be considered when conducting research. Subjects may withhold judgment on an issue if they expect that additional and possibly contradictory information will be forthcoming.

Hovland (1957) summarized the research on primacy by indicating that primacy has the advantage under the following conditions:

1. When subjects do not recognize the incompatibility between the communications.
2. When the same communicator presents both sides of a communication.
3. When subjects are required to make a committment or express a judgment before both sides have been presented.
4. When the subjects have little or no familiarity with the issue.

5. When the subjects have little emotional involvement with the issue.

Miller and Campbell (1959) looked at primacy-recency in terms of the timing of speeches and measurements. They suggested that, on the basis of the Ebbinghaus curve of forgetting, one should be able to predict whether primacy or recency would be most influential. They made the following conceptual distinction between primacy and recency effects: "recency effects are a function of general rates of decrement with passage of time while primacy effects are a function of higher asymptote eventually resulting from advantage of prior entry." They criticized most of the past research on primacy-recency because the research had been of the nature of presenting the communications contiguously and then of obtaining an immediate measure which does not allow for an optimal occurrence of either a primacy or recency effect. They suggested that testing should be delayed for at least a week to allow time for the effects of the communications to become apparent. In their experiment in which they utilized a one week delay in measurement, they obtained a primacy effect on the attitude measure, but a recency effect in terms of the amount of information recalled. Thus, they reasoned that retention factors were not responsible for their obtained primacy effect. They also obtained a measure of unacceptibility by asking the subjects to list the arguments which they could not agree with. They did not have the subjects list the arguments which they agreed with. Miller and Campbell used an unfamiliar court case as the topic of their communications; thus they assumed that the communications represented an area with which the subjects were relatively uninformed. However, it is certain that the subjects had

pre-existing attitudes pertaining to criminal acts and court room procedure. Hence, it is suggested that in future experiments similar to that of Miller and Campbell, the same results should be found when using topics with which the subjects have some familiarity.

Thomas, Webb and Tweedie (1961) studied primacy-recency effects regarding unfamiliar and familiar controversial topics. They utilized delayed measurement procedures and found no primacy effect for either condition. They suggested that not only must familiarity with the topic be considered, but also existing attitudes toward the topic.

Insko (1964) attempted to test Miller and Campbell's theory and obtained results contrary to Miller and Campbell's when using delayed measurement following contiguous presentation of the communications. The measures obtained by Insko for both opinion and recall were in the recency direction but were not statistically significant. Insko felt that Miller and Campbell used an inadequate method of measuring retention as they used recognition on multiple-choice items. Insko suggests that a better method of measuring retention would have been to ask subjects for straight recall. Insko states that Miller and Campbell actually imply that retention causes opinion; what Miller and Campbell really suggest, is that it is the mediating effect of "acceptance factors" which produce the final opinion.

Robert E. Lana has done a great deal of work with many of the variables crucial to the order of presentation of persuasive communications. Lana (1961) studied the effects of topic familiarity. He found that increased familiarity with a topic produced increased primacy effects and that for groups unfamiliar with the topic, he obtained

significant recency effects. He used "Animal Vivisection" as the topic of his communication. Lana's results are in direct contradiction to those obtained by Luchins (1958). Luchins suggests possible reasons for this contradiction in that the methods of communication were different; his study described a person whereas Lana's communication described a process and that there were also differences between basic tasks involved.

Lana (1963 a) tackled the problem of topic controversy using topics of either high or low controversy. He hypothesized that topics of high controversy would more likely yield primacy effects than the low controversy topics. He analyzed his data via *t*-tests and the analysis of covariance. A significant interaction was found between controversy and order. This was interpreted as meaning that the order of presentation has more effect on opinion change as the topic becomes more controversial. He found that the high controversy group showed a primacy effect while no effect was demonstrated by the low controversy group. Lana (1963 b) conducted another experiment in which he studied the effects of interest and media in order effects. He used high and medium interest topics and communications were either read to the subjects or they listened to them via tape recordings. The Subtractive-technique described by Hovland (1957) indicated that both the "Tape/Medium-Interest" group and the "Read/High-Interest" group yielded significant primacy effects. No significant directional effect was found in the High-Interest tape group while the Read/Medium Interest group showed a significant recency effect. He concludes that media of presentation influences opinion change, but just how this occurs is unclear.

Lana (1963 c) discussed three theoretical interpretations of order effects: Luchin's "set" interpretation, Rosnow's "reinforcement or conditioning" explanation and a "sensory-variation" hypothesis based on the work of Hebb, Scott, Lindsley and Malmo. With the "sensory-variation" hypothesis, the logic is that people seek high activation levels and that novel stimuli arouse higher cortical activity than do familiar stimuli. Lana feels that the "sensory-variation" hypothesis does a better job of predicting order effects when the topics involve current social issues than do the interpretations offered by Luchins and Rosnow.

Rosnow and Lana (1965) combined topic familiarity and reinforcement to see if and how these two variables interacted with each other in terms of opinion change. For the low familiarity group they found a significant recency effect while for the high familiarity group they found a significant primacy effect. In discussing the results of their experiment they indicate that some uncertainty remains as to whether familiarity may be expected to produce a stronger effect than reinforcement and creates doubts that variables contributing to primacy and recency effects combine additively to yield simple order effects.

Rosnow, Holtz and LeVine (1966) conducted a study in which they attempted to place variables affecting primacy-recency effects in an ordered hierarchy. The main variables they dealt with were topic familiarity, time of measurement, punishment and reinforcement, enculturation and argument strength. They found that measurement time and strength of arguments played the most influential role in determining order effect with enculturation tendencies falling at the middle of the

continuum while topic familiarity and contiguity of reward or punishment appeared to have the least influence on order effects. The rank ordering of variables appears to be a very logical and useful method of conceptualizing determinants of order effects.

Lana and Rosnow (1968) attempted to clarify the effects of pretest treatment interval on opinion change. They used intervals varying from two to twenty-one days and found no evidence that the time interval influenced opinion change to any large degree.

Zdep and Wilson (1968) attempted to test Miller and Campbell's theory, but they presented the communications in written form rather than verbally. They used the court room procedure technique as their topic of communication and interpolated excerpts from a murder trial between communications. They suggest that when one translates the implications of Miller and Campbell's model into analysis of variance terms, three predictions can be made:

1. "Interval" and "order" effects interact, with more recency expected when there is an interval between the arguments as this allows the first argument to decay more than the second. They confirmed this prediction.

2. "Delay" and "order" effects interact with relatively less recency expected when a delay occurs after the second speech as this allows both communications to decay. This prediction was also confirmed.

3. A second order interaction occurs between an "interval" and "delay" and "order," with relatively less increase in the effect of interval on the order effect being expected when a delay occurs, allowing both communications to decay considerably, even though the second communication is presented some time after the first.

They indicate that this last prediction yields the strongest recency effect and is possibly the most robust. They found that the interpolated material did not result in significant forgetting of information.

They obtained significant recency effects for both retention and opinion data. They conclude by suggesting that since several studies seem to indicate a recency trend, it appears appropriate to consider incorporation of a general expectation of recency effects into theories dealing with argumentive messages. However, they caution that the amount of agreement from study to study is still not so consistent that one can predict whether primacy or recency is to be expected under given conditions.

Miller (1968) reviewed the study conducted by Zdep and Wilson. He indicated that the failure of some studies to find primacy effects under conditions where it is expected, may be a direct result of using short, opposing speeches. He further indicates that it may be necessary to incorporate into his model notions such as "memory consolidation" for the first speech and/or the association of fatigue and boredom with the second speech. He also mentions that the retention differences produced by the model may be either minimized or completely eliminated when investigators use very short material as their communications. In his 1959 study, the speeches were approximately fifty minutes long. Thus, he recommends for future studies, that the experimenter who wishes to demonstrate primacy effects when using relatively short speeches, should be sure to allow a consolidation-time period of at least forty-five minutes before the onset of the second speech to enable "memory consolidation." Miller states that other factors such as greater interest, motivation or novelty for the first speech as opposed to the second, may enter into the model's predictions, though these factors may have not been stated explicitly before. He also

feels that this type of difference between opposing communications are maximal with long speeches, but only minimal with very short speeches. Another variable that must be considered is the similarity of the interpolated material to the actual material contained in the communications. Miller concludes that in the Zdep and Wilson study, the subject matter of their interpolated material was similar enough to the material used in their actual communications, that very possibly the interpolated material was confounded with the manipulation of "interval" and "delay" effects and that the effects of the two, need to be clarified.

Wilson (1968) reported that the Miller and Campbell model requires more investigation to establish it's reliability through replication and to indicate it's robustness in situations where irrelevant factors are manipulated.

CHAPTER III

PURPOSE

Past research indicates that a great deal of confusion exists concerning the primacy-recency problem. It has been difficult to specify the conditions under which a primacy or a recency effect could be expected. In fact, considering the contradictory findings, one questions the validity of speaking in terms of a Law of Primacy or Recency. Several investigators have indicated that retention or acceptance factors may be important variables influencing attitude change. How these variables bring about attitude change, however, remains unclear. Thus, the purpose of the present study is to explore the relationship between retention and acceptance factors on attitude change. Primacy-recency effects will also be studied. It may be possible that retention-acceptance factors combine with primacy-recency effects to bring about attitude change.

Miller and Campbell (1959) obtained measures of retention and found that retention was not related to attitude change. Hence, they postulated that the resulting attitude change was not a result of recall but rather of "acceptance" factors operating in some fashion. Their method of obtaining measures of retention was criticized by Insko (1964). He indicated that they used recognition on multiple-choice items and were, therefore, measuring recognition factors and not recall.

Insko suggested that a better method of measuring retention would be to ask subjects for straight recall of the communications. This suggestion will be incorporated into this experiment by having the subjects list all the arguments that they can remember immediately after they complete the post-test. A measure of acceptance will also be obtained by having the subjects make a notation next to each of their remembered arguments in terms of whether they agreed or disagreed with the argument. Miller and Campbell also obtained evidence for a primacy effect when measurement was delayed for one week. They hypothesized that as the time period between presentation of the communications and the obtaining of the measurement increased, so would the tendency for a primacy effect increase. This hypothesis was confirmed in their study.

More recent experiments have failed to support Miller and Campbell's findings using delayed measurement (Thomas, Webb and Tweedie, 1961; Insko, 1964; Zdep and Wilson, 1968). Miller (1968) indicates that a possible reason for this failure to obtain a primacy effect is that the communications which have been used are much too brief. Miller suggests that in future experiments where one wants to obtain primacy effects using short speeches, that a consolidation-time period of at least forty-five minutes be used before the onset of the second speech. Another criticism that can be made of past experiments is that they have used unfamiliar court cases as the topics for their communications; as such they have assumed that the communications have represented areas with which the subjects were relatively uninformed. It is logical to assume, however, that the subjects had pre-existing attitudes toward criminal acts and court room procedures. Consequently,

the topic of communication for this experiment will be one with which the subjects have some familiarity and it is hypothesized that the same results will hold.

Hypotheses

Hypothesis I: Acceptance will be more strongly related to attitude change than will retention.

Hypothesis II: Recency effects will be found under conditions of immediate measurement.

Hypothesis III: Primacy effects will be found under conditions of delayed measurement.

CHAPTER IV

METHODOLOGY

Subjects

The subjects used in the present study were enrolled in Introductory Psychology at the University of North Dakota. Research credit was given to students who participated in the experiment.

Selection of Communication Topic

The topic of communication in this experiment is "The University's Pass-Fail Grading System." This is an area of interest to most students, but not an area that is emotionally charged. On the basis of a ten point forced-choice ranking scale with ten being the most controversial and one being the least controversial rank, the Pass-Fail Grading System had an average rank of 4.8. Thus, one can describe the topic as being one of moderate controversy. The forced-choice ranking scale appears as Appendix A.

Development of Pass-Fail Attitude Scale

A pre-test which would yield a measure of existing attitudes toward the topic of communication was constructed. The attitude scale consisted of thirteen Likert-type items in which each item could be responded to in terms of five categories ranging from strongly agree to strongly disagree. Seven of the items were positive statements

concerning the topic and six items were negative. The attitude scale was given to sixty-two Introductory to Psychology students for purposes of performing an item analysis and obtaining reliability estimates. The items were scored in terms of favorability toward the topic. This was done by giving the following weights to the responses for the positive statements: strongly agree received a weight of 4, the agree response a weight of 3, the uncertain response a weight of 2, the disagree response a weight of 1, and the strongly disagree response a weight of 0. The scoring procedure was reversed for the negative statements so that a strongly disagree response received a weight of 4 whereas a strongly agree response received a weight of 0. Thus, the possible range of scores is from 0 to 40. Hence, a high score indicates a favorable attitude toward the topic while a low score signifies an unfavorable attitude. The ordering of the response categories was counterbalanced to prevent subjects from developing a response set. Thus, on statement one, the response categories were ordered from strongly disagree to strongly agree whereas on statement two, the response categories were ordered from strongly agree to strongly disagree. After the tests were scored, the 35 percent of the subjects scoring the highest and the 35 percent scoring the lowest were used as criterion groups for purposes of evaluating the individual statements. *t*-tests were computed to determine whether the statements differentiated reliably between the high and low groups. All statements differentiated between the two groups at the one percent confidence level with the exception of statements 4, 5, and 13. These three statements are still a part of the attitude scale but are used only as filler

items. Hence, the attitude score is based on ten items. A split-half reliability coefficient was obtained using the odd-even method. The reliability coefficient was found to be .74 which becomes .85 utilizing the Spearman-Brown correction formula. The Pass-Fail Attitude Scale appears as Appendix B.

Selection of Arguments and Statements

The experimenter talked with several students in order to obtain information as to how they viewed the pass-fail grading system. In addition, interviews were held with various faculty members to gain their impressions about grading systems. Pro and con arguments were then devised incorporating many of the points obtained in the aforementioned conversations. Thus, arguments for and against the pass-fail grading system make up the communications. Both pro and con communications are composed of approximately 810 words each. The arguments were then rated by twenty judges (graduate students) to insure that the pro and con communications were of approximately equal strength and overall effectiveness. The judges were asked to read each set of pro and con arguments and then to rate them in terms of whether the pro was stronger, con was stronger or both about equal. The arguments were judged to be relatively equal. The arguments were then mimeographed into two different sets; one with pro then con arguments and the other in the con-pro sequence. The arguments appear as Appendix C.

The Communication Experiment

The Pass-Fail Attitude Scale was administered to 476 students enrolled in the Introductory to Psychology course. The mean attitude

score for this group was 22.90 with a standard deviation of 5.64. One hundred individuals were then selected from the original subject pool. The subjects were matched on the basis of scores obtained on the attitude scale. The Pass-Fail Attitude Scale was used as both the pre-test and the post-test. As it was desired to have the subjects matched, this necessitated drawing the subjects from among the middle ranges in terms of attitude scores. Thus, the subjects were drawn from among those individuals scoring between twenty and twenty-six. The mean for this group was 22.93 with a standard deviation of 2.02. After the subjects were matched, they were randomly assigned to one of the five treatment conditions. All groups took the pre-test and had a one week delay before they received the communications. The treatment conditions were as follows:

TABLE 1

TREATMENT CONDITIONS FOR ORDER OF PRESENTATION AND TIME OF MEASUREMENT

		Argument Order		
		None	Pro-Con	Con-Pro
Delay	One Week		C	D
	None	E	A	B

Groups A and B were given the post-test immediately after reading the communications whereas Groups C and D had a week delay before completing the post-test. The control group (Group E) received no

treatment conditions, but took the post-test after a one week time period. After the post-test had been completed, the subjects were asked to list all the arguments that they could remember. The subjects were then asked to indicate whether they agreed or disagreed with the statements which they had remembered.

CHAPTER V

RESULTS

Treatment of the Data

The Pass-Fail Attitude Scale was used as both the pre-test and the post-test. It will be remembered that the subjects for this experiment were selected from the neutral ranges and that the scores on the post-test represent attitude change from the neutral range.

Measures of recall were obtained as it is still uncertain as to how recall is related to attitude change. Thus, it was desirable to determine whether subjects recalled more pro or more con statements. An Index of Recall was derived by utilizing the following formula: Index of Recall equals K plus (Number of pro statements recalled minus the number of con statements recalled) where K equals 30. An Index of Recall is advantageous as this enables one to incorporate both the number of pro and con statements remembered into a single index which simplifies the analysis. This same rationale applies to using an Index of Acceptance. Hence, when an Index of Recall is above 30, this indicates that more pro statements were recalled than con statements.

It is thought that acceptance factors play an important role in attitude change. Thus, measures of Acceptance were obtained to determine whether pro statements were accepted to a greater degree than were con statements. An Index of Acceptance was derived by using the

following formula: Index of Acceptance equals K plus (Number of pro statements accepted minus the number of con statements accepted) where K equals 30. Hence, when an Index of Acceptance is above 30, this indicates that more pro statements are accepted than are con statements.

Table 2 contains the means and standard deviations of the groups before treatment. The analysis of variance was performed on the groups before exposure to the treatment conditions and the results appear as Table 3. Table 3 shows that there were no significant differences among the groups prior to the treatment conditions.

TABLE 2

MEANS AND STANDARD DEVIATIONS OF PASS-FAIL ATTITUDE SCORES BEFORE TREATMENT CONDITIONS

	Group	N	Mean	S.D.
Immediate Retest				
Order: P-C	A	20	22.95	2.06
C-P	B	20	22.50	2.03
Delayed Retest				
Order: P-C	C	20	22.85	1.97
C-P	D	20	23.30	2.10
Control	E	20	23.05	2.08

TABLE 3

ANALYSIS OF VARIANCE OF ATTITUDE SCORES BEFORE TREATMENT CONDITIONS

Source	Sum of Squares	D.F.	Mean Squares	F	P
Order	.00	1	.00	.000	NS
Delay	2.45	1	2.45	.584	NS
Order X Delay	4.05	1	4.05	.965	NS
Within Cells	218.70	76	4.19		

Control Group

The means for the control group on both the pre-test and post-test were not significantly different. Hereafter, the control group will not be included in the analysis because there was no difference between the two means. Hence, any difference which is found with the other groups can be attributed to the treatment conditions.

Influence Results

The means and standard deviations of the groups after treatment appear in Table 4.

TABLE 4

MEANS AND STANDARD DEVIATIONS OF PASS-FAIL ATTITUDE SCORES AFTER TREATMENT CONDITIONS

	Group	N	Mean	S.D.
Immediate Retest				
Order: P-C	A	20	23.75	5.31
C-P	B	20	23.30	3.77
Delayed Retest				
Order: P-C	C	20	22.10	3.98
C-P	D	20	22.75	5.23
Control	E	20	23.35	3.74

The analysis of variance of the attitude change scores appear as Table 5 and from this it can be seen that there were no significant effects. The expected recency effect under immediate measurement was not found nor was there a primacy effect under the delayed measurement condition.

TABLE 5

ANALYSIS OF VARIANCE OF ATTITUDE CHANGE SCORES

Source	Sum of Squares	D.F.	Mean Squares	F	P
Order	.20	1	.20	.009	NS
Time	24.20	1	24.20	1.130	NS
Order X Time	6.05	1	6.05	.283	NS
Within Cells	1627.50	76	21.41		

Recall and Acceptance Results

The mean Indexes of Recall for the treatment groups appear in Table 6.

TABLE 6

MEAN INDEXES OF RECALL FOR TREATMENT GROUPS

	Group	N	Mean	S.D.
Immediate Retest				
Order: P-C	A	20	30.35	2.06
C-P	B	20	29.75	2.55
Delayed Retest				
Order: P-C	C	20	29.80	1.70
C-P	D	20	30.80	1.79

Analysis of variance was used to check on the effects of recall across treatment conditions (see Table 7). From Table 7, one can see that the Order X Time interaction term while non significant is approaching statistical significance. This interaction is shown in Figure 1. Inspection of Figure 1 suggests that there is a tendency for primacy effects

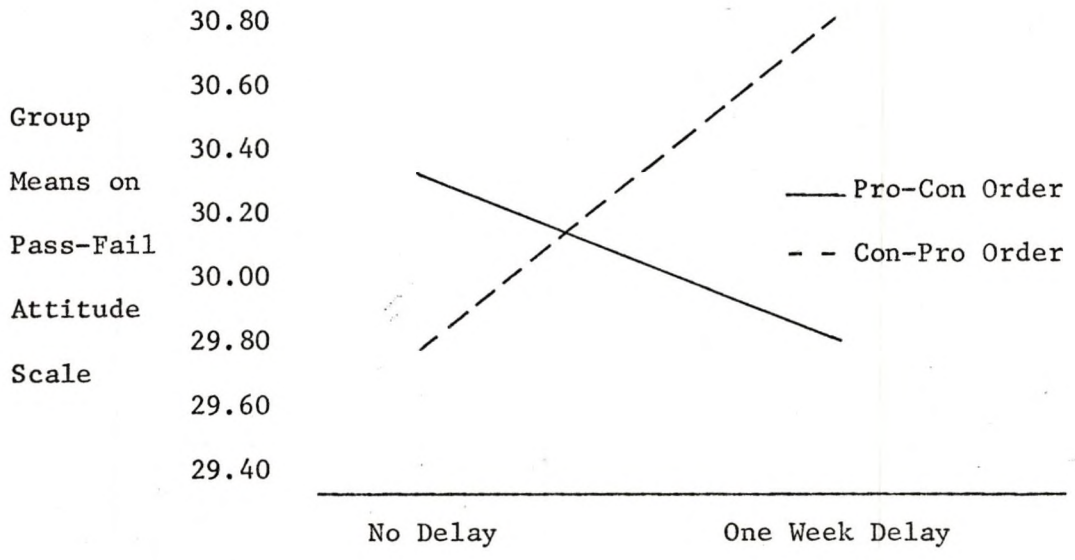
under the no delay condition and a tendency for recency effects under the one week delay condition.

TABLE 7

ANALYSIS OF VARIANCE FOR INDEX OF RECALL ACROSS TREATMENT CONDITIONS

Source	Sum of Squares	D.F.	Mean Squares	F	P
Order	.80	1	.80	.19	NS
Time	1.25	1	1.25	.30	NS
Order X Time	12.80	1	12.80	3.13	NS
Within Cells	310.70	76	4.08		

Fig. 1.--Index of recall order X time interaction



The mean Indexes of Acceptance for the treatment groups appear in Table 8. Analysis of variance was used to check on the effects of acceptance across treatment conditions. No significant effects were found and the results are shown in Table 9.

TABLE 8

MEAN INDEXES OF ACCEPTANCE FOR TREATMENT GROUPS

	Group	N	Mean	S.D.
Immediate Retest				
Order: P-C	A	20	31.40	1.93
C-P	B	20	30.55	2.31
Delayed Retest				
Order: P-C	C	20	30.85	1.79
C-P	D	20	30.65	1.84

TABLE 9

ANALYSIS OF VARIANCE FOR INDEX OF ACCEPTANCE ACROSS TREATMENT CONDITIONS

Source	Sum of Squares	D.F.	Mean Squares	F	P
Order	5.51	1	5.51	1.41	NS
Time	1.01	1	1.01	0.25	NS
Order X Time	2.12	1	2.12	0.54	NS
Within Cells	296.85	76	3.90		

Pearson product moment correlation coefficients were computed for the Indexes of Recall and Acceptance with post-test scores. The results appear in Table 10. From Table 10 it can be seen that the Indexes of Recall and Acceptance correlate .70 with each other. This indicates that the greater the tendency to recall pro arguments, the greater the tendency to agree with them. Recall correlates .09 with post-test scores whereas acceptance correlates .46 with post-test scores. This latter correlation is significant at the .001 level of

TABLE 10

INTERCORRELATION OF INDEXES OF RECALL AND ACCEPTANCE WITH POST-TEST SCORES (N=80)

	Recall	Acceptance	Post-Test
Recall	-	.70	.09
Acceptance	-	-	.46
Post-Test	-	-	-

confidence, indicating that the subject's tendency to be influenced by an argument is proportional to his acceptance of it. However, there is no significant relationship between influence and mere recall. Moreover, note Table 11, which shows the total number of statements accepted. From this table one can see that there is little difference between the number of pro or con statements recalled. However, the positive statements are accepted to a much greater extent than are the negative statements.

TABLE 11

TOTAL NUMBER OF STATEMENTS REMEMBERED AND ACCEPTED

	Immediate Measurement		Delayed Measurement	
	Number Recalled	Number Accepted	Number Recalled	Number Accepted
PRO	144	122	113	93
CON	142	84	99	63

	Combining Both Immediate and Delay Groups for Recall and Acceptance	
	Number Recalled	Number Accepted
PRO	257	215
CON	241	147

CHAPTER VI

DISCUSSION

The failure to obtain the expected recency effect under immediate measurement and a primacy effect under the delayed condition may be due to the fact that there was no time interval between the first and second communications. Miller (1968) suggested that with short speeches there should be at least a forty-five minute "consolidation period" between the communications. Another possible explanation of the failure of the conditions to effect attitude change may have been because of the subjects used. In this experiment, the subjects had a neutral attitude towards the topic of communication. Hence, they may have been equally influenced by both the pro and con arguments thereby accounting for the almost negligible attitude change. In future experiments, subjects should be selected from those having extreme attitude scores. Subjects who are either highly favorable or highly unfavorable in regards to the topic, may be more amenable to attitude change. A future study should be conducted to clarify the effects of this variable. Although the treatment conditions did not result in any significant differences, the variability within groups was greatly increased. Thus, while the average changes were negligible, some individuals changed markedly, but individual changes tended to balance themselves off.

There is little difference in terms of the number of pro or con statements recalled, though there is a slight tendency for positive statements to be remembered over negative statements. There is a large difference between statements that are accepted, however, with positive statements being accepted to a much larger degree than are negative statements. The findings of this study suggest that when one is attempting to persuade someone, it is better to phrase the various arguments in a positive direction as they appear to be more easily accepted than when the arguments are negatively stated. Indexes of Recall and Acceptance correlated .70 with each other. This indicates that the greater the tendency to recall pro arguments, the greater the tendency to agree with them. However, Recall correlated only .09 with post-test scores while Acceptance correlated .46 with post-test scores. This latter correlation was significant at the .001 level of confidence, indicating that the subject's tendency to be influenced by an argument is proportional to his acceptance of it. The .70 correlation between Recall and Acceptance indicates that these two variables have approximately fifty percent of their variance in common. In terms of post-test scores, however, the Recall factor accounts for less than one percent of the variance whereas Acceptance accounts for twenty-five percent of the variance. Thus, the findings of this study tend to support Miller and Campbell's (1959) conclusion that recall does not account for attitude change but rather, it is the "mediating" effects of the acceptance factor.

CHAPTER VII

SUMMARY

This experiment was designed to explore the relationship between retention and acceptance factors on attitude change. The effects of delayed measurement on primacy-recency was also investigated. The subjects used in the study were enrolled in Introductory Psychology at the University of North Dakota. The subjects were matched on the basis of scores obtained on the Pass-Fail Attitude Scale. This necessitated using subjects with a neutral attitude toward the topic of communication. After the subjects were matched, they were randomly assigned to one of five treatment conditions and received the persuasive communications. Both pro and con communications consisted of approximately 810 words each. The communications were presented contiguously in either the pro-con or con-pro sequence. Following communication presentation, the Pass-Fail Attitude Scale was again administered either immediately or following a one week delay. Thus, the scores on the Pass-Fail Attitude Scale are influence scores and represent attitude change. This procedure resulted in mean attitude change scores for each treatment condition.

After subjects completed the post-test, they were asked to list all the arguments that they could remember. Following this, the subjects were asked to indicate whether they agreed or disagreed with the

statements which they had remembered. Indexes of Recall and Acceptance were derived. Mean Indexes of Recall and Acceptance were obtained for each treatment condition.

The data was collected and the analysis of variance was used to assess the effects of the treatment conditions on influence scores. The expected recency effect under immediate measurement was not found nor was there a primacy effect under the delayed measurement condition.

Analysis of variance was used to check on the effects of both Recall and Acceptance across treatment conditions. No significant effects were found.

Pearson product moment correlation coefficients were computed for the Indexes of Recall and Acceptance with post-test scores. Recall and Acceptance correlated .70 with each other. Recall correlated .09 with post-test scores while Acceptance correlated .46 with post-test scores. Thus, Acceptance is correlated with post-test or attitude scores to a much greater extent than is Recall, in this study.

APPENDIX A

FORCED-CHOICE RANKING SCALE

Rank the following topics according to degree of controversy, ranking from 1 to 10 with 1 being the most controversial:

Stock Market _____

Juvenile Delinquency _____

"Free Love" _____

Pass-Fail Grading System _____

Viet Nam War _____

Urban Renewal _____

Different Foods _____

Clothes _____

College Dorm Rules _____

Music _____

APPENDIX B

PASS-FAIL ATTITUDE SCALE

1. A student's desire to excel is diminished in courses graded on a Pass-Fail basis.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

2. I feel that too much emphasis is placed on grades.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

3. Students intent on learning will master the subject material regardless of the grading system used.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

4. Many tests are not an adequate measure of what a student has gained from a course.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

5. The major responsibility for learning rests with the student.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

6. I would approve of more courses being offered on a Pass-Fail basis.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

7. Courses graded on a Pass-Fail basis tend to lead to lack of enthusiasm on the part of both students and instructors.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

8. Competition among fellow students plays a large role in terms of the amount of work I put into a course.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

9. Pass-Fail courses tend to favor the weaker student.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

10. Pass-Fail courses are more flexible and hence, allow for more individual research.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

11. Enrolling in a Pass-Fail course is an easy way to obtain credits.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

12. Generally speaking, I feel that increasing the number of Pass-Fail courses would tend to decrease the overall level of education being offered.

Strongly Agree Agree Uncertain Disagree Strongly Disagree

13. With Pass-Fail courses, instructors should have little difficulty in differentiating acceptable from unacceptable work.

Strongly Disagree Disagree Uncertain Agree Strongly Agree

ARGUMENTS AND STATEMENTS

Introduction

In 1967, the University began offering certain courses on the Pass-Fail grading systems. A student had to be of Junior or Senior standing in order to enroll for a course under the Pass-Fail system and no more than four courses could be counted toward the Baccalaureate degree. In addition, courses taken under the Pass-Fail system could not be counted toward a major or a minor. Recently, several departments have requested and received permission to increase the number of courses offered on a Pass-Fail basis. There are many reasons why the Pass-Fail system should or should not be extended:

By offering more courses on a Pass-Fail basis, students will be able to enroll in more courses outside their major field of study and thus, they will receive a more well-rounded, broadened education. This is possible because pressure to compete for letter grades is somewhat removed and students have only to demonstrate adequate understanding of subject concepts rather than being expected to come out of the course as experts of detail. Students may also enroll in advanced courses in some fields of study without having taken the usual prerequisite or background courses. In many cases it is ridiculous to require background courses as a prerequisite as many students could adequately deal with many advanced courses without the usually required background courses. This system would enable, for example, an elementary education major to take courses in psychology on the Pass-Fail basis without having to worry about his grade-point average going down because of taking courses outside his major field of study.

Instructors can take a more logical and flexible approach in their classroom presentations when teaching under a Pass-Fail system. This is because the instructor can gear his presentations toward enabling the students to gain a better understanding of the basic concepts of the course rather than concentrating on minor details which are often used to differentiate "A" from "B" from "C" students. Hence, the instructor is able to introduce a great deal of material just for it's stimulation value in terms of initiating individual work and research. Thus, the instructor can introduce points and areas of controversy without going into a great amount of specific detail with the idea being that the students will then pursue the particular area in more detail

independently if they are interested. Hence, the instructor can cover more material and introduce differing points of view with the idea being that the students will then work on their own and formulate their own opinions about points of controversy rather than just memorizing facts out of the text book and lectures because they might be examined on the often minor, insignificant details.

With many courses and instructors, the grade a student receives depends on many factors such as quality of work performed, personal appearance, how well the instructor knows the student, etc. Hence, the possibility exists that a student's grade may be determined more on a subjective basis than on an objective one. Courses graded on a Pass-Fail system should result in much less subjectivity on the part of the instructor in terms of grading as it is relatively easier for an instructor to objectively differentiate between acceptable and unacceptable work than it is to make fine discriminations between "A" and "B" students on the basis of one or two points. The Pass-Fail system also is more desirable than the regular grading system as it encourages more independent, evaluative type thinking on the part of the student rather than forcing students to "rote memorize" insignificant details just because they know they will be tested on the details.

The Pass-Fail system provides an excellent opportunity for students to develop a sense of responsibility, personal maturity and self-growth. It is the instructor's function to present information to the students and to guide and assist them in their attempts to gain mastery over the subject material. However, this does not mean that the instructor should spoon-feed his students, but rather he should instill

in his students a desire to gain knowledge and help them to acquire skills in working independently on their own. There is now a trend among some elementary and many secondary schools in the direction of offering courses on a Pass-Fail or satisfactory-unsatisfactory basis. Hence, many beginning college students are already familiar with this type grading system.

The Pass-Fail grading system is more conducive to individual work and research. The pressure to achieve high grades is removed and thus the learning situation occurs in a very relaxed atmosphere. The goals of courses offered under the Pass-Fail system could be to develop within the student argumentative, analytical and synthesizing abilities. Emphasis would be placed on making evaluative judgments and decisions rather than concentrating on memorizing often meaningless factual information. In addition, many tests are not a true estimate of what a student has gained from a course as a person may be able to memorize and recall factual information and hence, do quite well on examinations without really having an adequate understanding of the basic concepts involved. Under the Pass-Fail system, students strive for mastery of basic concepts and then are encouraged to pursue areas of special interest on their own. The students have more time to get involved in individual work as they do not have to spend time memorizing details just for examination purposes.

Although it is unfortunate, it is true that many students are lacking in maturity and self-initiative and thus, they would have a great deal of trouble in disciplining themselves when they started enrolling in Pass-Fail courses. The Pass-Fail system, by it's nature,

automatically decreases motivation and the desire to do well in courses. This is because there is no longer any competition between classmates for the highest grades and thus, little chance for recognition of a job well done. We know that grades have a very definite reinforcement value and are often excellent motivators even in situations where the grades one receives are very low. Competition has always tended to increase interest and enthusiasm no matter if applied to the academic world or in terms of maintaining interest in a community project or job situation. Many students need incentives such as student competition and the reinforcement value of grades to keep them actively interested in a course.

The Pass-Fail system should not be extended as already the present system of Pass-Fail grading for a limited number of courses results in a lowering of academic performance and the quality of education being offered. There are already too many marginal men in society and the Pass-Fail grading system tends to perpetuate marginal men as the system appeals to the average or below average student who often wants to do just enough to get by. It could be expected that both students and instructors alike might become apathetic in terms of their interest and motivation as pertains to the course. Society is set up on a pretty much structured basis and hence, when a course becomes less structured as in terms of grading on Pass-Fail systems, the students can easily become confused as to what is expected of them. The above average student is penalized as he is classified along with the average student when grades are either satisfactory or unsatisfactory.

Everyone needs to know how they are doing in comparison to their peers whether it be in the academic realm or in their individual job situations. Without knowledge of how one is doing, a certain amount of insecurity develops as one is never really certain as to where he stands in comparison to his fellow students or workers. Hence, students desire to know how well they stand up in comparison to their fellow students and also how well they are doing in their instructor's eyes. By the same token, when instructors assess the performance of their students, they are also evaluating their own teaching effectiveness. For example, if a large portion of a class does quite poorly on a particular area or segment of the course material, the instructor is alerted to the fact that that particular material should have been covered or gone over more thoroughly. The Pass-Fail grading system does not as readily lend itself to this type of evaluation as does the usual grading system.

Another difficulty that arises out of offering courses on this system is that one gets a much more diverse grouping of students in that the students possess varying amounts of background knowledge about the subject matter. For example, some students may have taken several courses which are related to the Pass-Fail course for which they have enrolled, whereas other students may have had very little if any knowledge about the subject matter and they have enrolled purely out of an interest in the course. This situation makes it somewhat difficult for the instructor to gear his classroom presentations at a level that he considers desirable and that also is meaningful and challenging enough for the majority of the students. This problem or situation does not

arise when course prerequisites are required before a student is allowed to enroll in a particular course. Thus, with the Pass-Fail system, much more work and planning is required on the part of the instructor as he has to satisfy and stimulate students with varying amounts of knowledge about the particular subject area.

Bright students and those who work very hard are penalized under the Pass-Fail system as the "A" and "B" students are placed in the same category as the "C" students when they are graded simply as satisfactory. This type of grading system provides no means by which very excellent or productive work can be acknowledged. There is also the possibility that a student may get more "F"'s under the Pass-Fail system than under the regular grading system as now the "D" or marginal grade is eliminated. The chances of receiving an "F" also increases as often instructors raise their standards required for passing the course above those standards which they would employ if they were teaching the course according to the usual grading system.

REFERENCES

REFERENCES

Allyn, J., & Festinger, L. The effectiveness of unanticipated communications. Journal of Abnormal and Social Psychology, 1961, 62, 35-40.

Ewing, T. N. A study of certain factors involved in changes of opinion. Journal of Social Psychology, 1942, 16, 63-88.

Goldberg, S. C. Three situational determinants of conformity to social norms. Journal of Abnormal and Social Psychology, 1954, 49, 325-329.

Hovland, C. I. (Ed.) The role of primacy and recency in persuasive communication. The Order of Presentation in Persuasion. New Haven, Conn. Yale University Press, 1957.

Hovland, C. I., & Pritzker, H. Extent of opinion change as a function of amount of change advocated. Journal of Abnormal and Social Psychology, 1957, 54, 257-261.

Hovland, C. I., Harvey, O. J., & Sherif, M. Assimilation and contrast effects in reactions to communication and attitude change. Journal of Abnormal and Social Psychology, 1957, 55, 244-252.

Insko, C. A. Primacy versus recency in persuasion as a function of the timing of arguments and measures. Journal of Abnormal and Social Psychology, 1964, 69 (no. 4), 381-391.

Lana, R. E. Familiarity and the order of presentation of persuasive communications. Journal of Abnormal and Social Psychology, 1961, 62, 573-577.

Lana, R. E. Interest, media and order effects in persuasive communications. Journal of Psychology, 1963, 56, 9-13.

Lana, R. E. Controversy of the topic and the order of presentation in persuasive communications. Psychological Reports, 1963, 12, 163-170.

Lana, R. E. Three theoretical interpretations of order effects in persuasive communications. Psychological Bulletin, 1963, 61, 314-320.

Lana, R. E., & Rosnow, R. L. Subject awareness and order effects in persuasive communications. Psychological Reports, 1963, 12, 523-529.

Lana, R. E., & Rosnow, R. L. Effects of pre-test treatment interval on opinion change. Psychological Reports, 1968, 22, 1035-1036.

Luchins, A. S. Definitiveness of impression and primacy-recency in communications. Journal of Social Psychology, 1958, 48, 275-290.

Lund, F. H. The law of primacy in persuasion. Journal of Abnormal and Social Psychology, 1925, 20, 183-191.

Miller, N., & Campbell, D. T. Recency and primacy in persuasion as a function of the timing of speeches and measurements. Journal of Abnormal and Social Psychology, 1959, 59, 1-9.

Miller, N. Comments on Zdep and Wilson study. Psychological Reports, 1968, 23, 377-378.

Rosnow, R. L., & Russell, G. Spread of effect of reinforcement in persuasive communications. Psychological Reports, 1963, 12, 731-735.

Rosnow, R. L., & Lana, R. E. Complementary and competing order effects in opinion change. Journal of Social Psychology, 1965, 66, 201-207.

Rosnow, R. L. "Conditioning" the direction of opinion change in persuasive communications. Journal of Social Psychology, 1966, 69, 291-303.

Rosnow, R. L., Holtz, R. F., & Levin, J. Differential effects of complementary and competing variables in primacy-recency. Journal of Social Psychology, 1966, 69, 135-147.

Thomas, E. J., Webb, S., & Tweedie, J. Effects of familiarity with a controversial issue on acceptance of successive persuasive communications. Journal of Abnormal and Social Psychology, 1961, 63 (no. 3), 656-659.

Wilson, W. In accord with Norman Miller on recency. Psychological Reports, 1968, 23, 386.

Zdep, S., & Wilson, W. Recency effects on opinion formation. Psychological Reports, 1968, 23, 195-200.