The Effect of Order of Presentation in a Two-Sided Communication Relevance of Topic, & Receiver's Sex, Self-Esteem, & Dogmatism Upon Attitude Change & Recall

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THE EFFECT OF ORDER OF PRESENTATION IN A TWO-SIDED COMMUNICATION
RELEVANCE OF TOPIC, AND RECEIVER'S SEX, SELF-ESTEEM,
AND DOGMATISM UPON ATTITUDE CHANGE AND RECALL

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by
Earl Franklin Dulaney Jr.

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THE EFFECT OF ORDER OF PRESENTATION IN A TWO-SIDED COMMUNICATION, RELEVANCE OF TOPIC, AND RECEIVER'S SEX, SELF-ESTEEM, AND DOGMATISM UPON ATTITUDE CHANGE AND RECALL

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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES.</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>vi</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>vii</td>
</tr>
</tbody>
</table>

CHAPTER

I. INTRODUCTION, REVIEW OF LITERATURE, AND RATIONALE. ........................................ 1

   Introduction. ........................................ 1
   Review of Literature. ............................... 2
   Causal Interpretations ............................ 4
      The "Set" Hypothesis. ........................... 4
      The "Ebbinghaus Negatively Accelerated
      Forgetting Curve" Interpretation. ............ 9
      The "Cognitive Complexity" Hypothesis ....... 18
      The "Sensory Variation" Hypothesis .......... 23
      The "Contrast-Assimilation and Magnitude
      of Impact" Hypothesis ........................ 26
   Anderson's Three Models ......................... 29
      The "Weighted Average" Model ................. 29
      The "Linear" Model ............................ 30
      The "Change of Meaning" Model ............... 30
      The "Attention Decrement" Model ............. 31
      The "Discounting" Hypothesis ................ 32
   Concomitant Factors Affecting Primacy-Recency. 32
      "Commitment" Factors ........................ 33
      "Need-Arousal" Factors ........................ 35
      "Immunization" Factors ........................ 36
      "Reinforcement" Factors ....................... 37
      "Conflict-Avoidance" Factors ................. 38
   Personality Characteristics .................... 39
      Intro- and Extroversion, Neuroticism, and
      Self-Esteem ..................................... 39
      Dogmatism ....................................... 40
      Machiavellianism and Dogmatism ............... 40
LIST OF ILLUSTRATIONS

1. Figure 1: Hypothetical Forgetting Curves for Two Competing Communications. ............... 11
LIST OF TABLES

1. Pearson Correlation Coefficients: Interjudge Correlations for Speeches. ........................................ 53

2. Summary Table: Frequency of Acceptance Position Change Scores by Esteem x Dogmatism x Sex. .................. 63

3. Comparison of Group Means: Frequency of Acceptance Position Change Scores by Esteem x Dogmatism x Sex. .................. 64

4. Summary Table: Average Acceptance Position Change Scores by Order x Esteem x Sex ........................................ 66

5. Comparison of Group Means: Average Acceptance Position Change Scores by Order x Esteem x Sex ........................................ 67

6. Summary Table: Average Rejection Position Change Scores by Order x Esteem x Sex ........................................ 68

7. Comparison of Group Means: Average Rejection Position Change Scores by Order x Esteem x Sex ........................................ 69

8. Summary Table: Recall by Relevance x Dogmatism x Sex ........................................ 71

9. Comparison of Group Means: Main Effects ........................................ 72

10. Comparison of Group Means: Recall by Dogmatism x Sex ........................................ 73

11. Summary Table: Frequency of Acceptance Position Change Scores by Relevance x Esteem x Sex ........................................ 75

12. Summary Table: Frequency of Rejection Position Change Scores by Esteem x Relevance x Sex ........................................ 76

13. Summary Table: Frequency of Noncommitment Position Change Scores by Relevance x Esteem x Sex ........................................ 77

14. Summary Table: Average Acceptance Position Change Scores by Relevance x Esteem x Dogmatism ........................................ 80

15. Summary Table: Average Rejection Position Change Scores by Relevance x Dogmatism x Esteem ........................................ 81
16. Summary Table: Frequency of Rejection Position Change Scores by Order x Relevance x Esteem.

17. Comparison of Group Means: Frequency of Rejection Position Change Scores by Order x Relevance

18. Summary Table: Average Acceptance Position Change Scores by Order x Relevance x Sex

19. Comparison of Group Means: Average Acceptance Position Change Scores by Order x Relevance

20. Summary Table: Frequency of Noncommitment Positions Change Scores by Order x Esteem x Sex

21. Pearson Correlation Coefficients: Attitude Measure and Recall Measure Correlations

22. Regression Equation: Change in Most Acceptable Position

23. Regression Equation: Change in Frequency of Acceptance Positions

24. Regression Equation: Change in Frequency of Rejection Positions

25. Regression Equation: Change in Frequency of Noncommitment Positions

26. Regression Equation: Change in Average Acceptance Positions

27. Regression Equation: Change in Average Rejection Positions

28. Regression Equation: Change in Average Noncommitment Positions

29. Regression Equation: Recall

30. Polynomial Regression Coefficients
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This thesis is dedicated to my wife, Jennye, for her patience and invaluable encouragement.
THE EFFECTS OF ORDER OF PRESENTATION IN A TWO-SIDED COMMUNICATION, RELEVANCE OF TOPIC, AND RECEIVER'S SEX, SELF-ESTEEM, AND DOGMATISM UPON ATTITUDE CHANGE AND RECALL

Earl Franklin Dulaney Jr. December 1978 127 pages

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Based on past findings in the area of order effects in persuasion, the purpose of this paper was to examine the effects of the receiver characteristics of sex, self-esteem, and dogmatism, message relevance, and order of presentation upon attitude change and recall. The study analyzed category differences and multivariate relationships. Interesting results were attained. Males high in esteem and dogmatism were not as easily persuaded as females high in esteem and dogmatism. Females high in esteem responded with a significant primacy effect, while females low in esteem responded with a significant recency effect. Subjects low in dogmatism recalled more than subjects high in dogmatism. Subjects in the irrelevant message condition recalled more and were persuaded to a greater degree than subjects in the relevant condition. Recall scores did not correlate highly with attitude change scores. Finally, the stepwise multiple regression equation revealed a small amount of variation explained by the five predictor variables.

Based on application of theoretical assumptions and models designed to predict primacy and recency to the results achieved, the need for future research to follow the variables approach to the issue became apparent.

vii
CHAPTER I

INTRODUCTION, REVIEW OF LITERATURE,
AND RATIONALE

Introduction

This experimental undertaking has a basically straightforward purpose: it attempts to assess the effects of order of presentation in a two-sided communication in relation to relevance of topic, receiver personality variables of dogmatism and self-esteem, and the demographic variable of sex as these differentially affect attitude change and recall. In addition to an assessment of category differences, the study will examine multivariate relationships and will develop a predictive regression equation for attitude change and for recall.

Certain key terms must initially be defined. In discussing order effects of a two-sided communication, primacy refers to the situation in which the argument given first, whether pro or con, is more effective in changing opinion in the direction of the argument. Recency refers to a similar effectiveness in changing opinion in the direction of the argument presented last. Relevance of material refers to the receivers' perception of topic interest, familiarity, and controversy. Dogmatism refers to the relative open-mindedness of the belief systems of an individual (i.e., the willingness of an individual to bring together different parts of his belief systems in assessing new information). Finally, self-esteem refers to the individual's
feelings of personal adequacy, social adjustment with others, and
degree of anxiety in facing new situations.

Review of Literature

Contemporary speech manuals reflect much interest in the
influence of serial arrangement in communication. Their suggestions
are perhaps influenced by the large body of research in the area.

Research in order effects has concentrated on three basic
research designs, the first two of which are the effects of order
upon attitude and the effects of order upon recall. Researchers
concerned with the effects of order upon recall have typically used
messages that differ somewhat from the normal rhetorical discourse,
such as broadcasts of different news events unrelated in nature
or content, biographical information, sequences of nonsense syllables,
or simple statements. Researchers in persuasion, on the other hand,
have analyzed the effects in a more pragmatic rhetorical sense (e.g.,
the use of persuasive speeches or messages) in determining the ef-
fectiveness of different presentational orders. The third area of
concentration has been the area of impression formation. Researchers
in this category have not been concerned with shift of opinion per se,
but have been concerned more with the subjects' first impressions of

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of an individual based on factors such as receivers' cognitive complexity, contradictory information about the individual, receiver personality characteristics, and other variables that may influence one's impression formation.

There have been relatively few attempts to provide a composite picture of the theoretical interpretations for the causes and concomitant factors which influence order effects. Lana provided a limited review of three possible explanations for order effects, but his review did not include other interpretations such as the "cognitive complexity" hypothesis, the "linear operation" hypothesis, the "Ebbinghaus forgetting curve" hypothesis, the "weighted average" hypothesis, or the "change of meaning" hypothesis. Also his review did not take other factors into account which may influence but not directly cause order effects, such as commitment, need-arousal, or audience pre-disposition toward the topic, to name a few. Rosnow and Robinson stated that the attempts to provide a theoretical framework for order effects "have not met with much success." More recently, Crano argued that none of the predictive models has met "with more than modest support, and the field today is no more consolidated, from the standpoint of theoretical consensus, than it was in 1957."

The purpose of this section, then, is to provide a parsimonious

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review of research literature on the topic and suggest a more complete view of the theoretical frameworks for the causes and concomitant factors that tend to influence the effects of serial arrangement in speech communication. Such a review would serve to consolidate the divergent findings into a single outline and provide a possible springboard for future research.

Causal Interpretations

The "Set" Hypothesis

The experiments of Asch, Luchins, and Anderson and Barrios gave birth to a theoretical answer to the cause of primacy-recency based on subjects' cognitive "set" or Einstellung, a term coined by nineteenth century psychologists. The founding principle is that when a subject is confronted with unfamiliar material he will establish a tendency to react later in terms of initial material rather than in terms of material presented subsequently. It is assumed that prior to the presentation the subject has had no organization with respect to the material. The material presented will supply the organization, thus influencing subsequent responses. Based on this principle, then, early advocates of the set theory maintained that when

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one is confronted with a communication about a novel subject that supports an opinion, subsequent communications will be relatively ineffective in producing opinion change.

Order effects research has not always followed the strict condition of primacy or novelty of information. Schultz defined two categories of order effects studies: the "true" primacy study in which subjects have had no prior contact with the information presented, and the "experimentally induced" primacy study in which the subjects have had prior contact with the information used. As a general rule, the true primacy studies have been those of impression formation, as the subjects could have had no prior contact with the information (i.e., information about a fictitious character's personality). Conversely, the experimentally induced primacy studies have been those using speech topics concerning relevant social issues. The controversy that arises here is one of applicability. Can the set explanation adequately predict attitude change in experimentally induced primacy studies? An examination of the results of empirical research on the issue follows.

Luchins' studies were concerned with presenting descriptions of a character, Jim, to subjects. The descriptions were taken from a continuum of extroversive-introversive personality characteristics, thus basically contradictory in nature, and reversed in order for each group. The complete lack of familiarity with the information presented was assured, as the character described was fictitious.

Luchins found consistent primacy effects. He favored the set theory as the explanation, in that the initial description directed the later opinions of subjects in much the same manner that initial solutions to problems often direct subsequent solutions to similar problems. Luchins was further able to minimize the effect of primacy by inserting statements such as "I want each of you to suspend judgement of the individual about whom you are to read until you have finished reading all that is written about him. Don't make snap judgements. Take into account all you read." With the application of these statements Luchins was able to minimize the primacy effect, depending on how early or late the warning came in the procedure. In a similar experiment Luchins, and also Mayo and Crocket, found a recency effect when a questionnaire was inserted between the two communications. This result was also later reported by Rosenkrantz and Crockett.

Anderson and Barrios have reported experiments supporting the set hypothesis as well. They also used favorable and unfavorable personality adjectives about an individual, finding significant support for the initial material presented.

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8 Luchins, "Experimental Attempts," p. 65.


The results of several experiments do not support the set hypothesis, however. Lana argued that the results of opposing studies may have been due to situations in the experiments that did not adhere to conditions necessary for correct predictions from the set hypothesis.  

Wilson further attempted to specify the "standard" conditions necessary to predict primacy. They are: (a) a written verbal description of an individual, (b) opposed communications presented one after the other, and (c) an immediate post test. Nevertheless, Rosenkrantz and Crockett followed Wilson's standard conditions and were unable to find a significant primacy effect.

In a study by Lana, a consistent primacy effect was found when subjects were low in familiarity. This effect would seem to suggest that adding topic familiarity alters the set explanation, since highly familiar groups yielded a significant primacy effect in Lana's study, as did completely novel topics in the studies mentioned previously. The contradiction that arises here is magnified by other research findings. Rosnow duplicated Lana's results and found that subjects low in familiarity responded with recency effects.

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14 Rosenkrantz and Crockett, "Factors Influencing Assimilation," 397-402.

Using controversial topics, Thomas, Webb, and Tweedie also found results inconsistent with the set explanation in that no consistent primacy effects were evident among unfamiliar groups. In a second study, Lana found that primacy appeared in groups exposed to a familiar, controversial and interesting topic, while no primacy effects occurred among unfamiliar groups. Lana finally concluded that the "set hypothesis would have predicted a recency effect... or no effect at all" for the familiar groups.

In sum, early researchers in the vein of the "set" explanation for primacy-recency effects assumed that in order for a set to occur there had to be total absence of prior contact of subjects with the topics. Subsequent research by Rosnow, Lana, and Thomas, Webb, and Tweedie has suggested that the set theory may not accurately predict what happens when a topic is highly familiar since the set theory is oriented toward the paramount importance of topic unfamiliarity. Their studies included topics of current social issues which were highly interesting, familiar, and controversial. In these instances the set explanation was unable to predict the results since the subjects obviously had some degree of contact with the topics used. Interesting results were obtained. In all cases there was found no primacy effect among unfamiliar groups while highly familiar groups


19 Ibid.
yield strong primacy effects. In a discussion of whether or not the set theory may adequately predict recency on the basis of the inconsistent results of these studies, Lana stated: "At this point it is better to conclude that the set hypothesis is not structured to explain order effects when communications concerning relevant social problems are involved, rather than to conclude it is made tenuous" by the results of such studies.

The Ebbinghaus Negatively Accelerated Forgetting Curve Interpretation

Miller and Campbell present a theoretical model to explain order effects derived from prior research by Ebbinghaus. In it they assume that the persuasive impact of a message is a function of its retention. According to the theory, changes in opinion over time should parallel those of retention, and measures of opinion should correlate highly with those of retention. To explain the foundation of their hypothesis they state:

Our judgements, our responses, our social perceptions are a function of some net resultant of the past experiences, both recent and remote. To the net resultant for the moment not all past experiences contribute equally. . . were it not so unlearning and new learning could not take place. . . The momentary advantage of the very recent may allow trivial events of this morning to outweigh momentarily more significant learnings of the past, but this momentary advantage of the moment will dissipate rapidly allowing the relative influence of the older learnings to recover spontaneously tommorrow, or the next day, if the events like this morning prove to be untypical and do not recur.

\[20\] Ibid.


\[22\] Ibid., p. 1.
At this point they state Jost's second law: "Of two associations equally strong at the moment, the older will decay less rapidly," suggesting a primacy effect with time. In their study the order in which successive arguments were presented (pro-con and con-pro), the time interval between them (none and one week), and the time of testing (immediately after the last communication and one week after) were varied for eight groups, each tested once. When subjects were tested immediately after hearing both communications one after the other, a recency effect was found. This finding was explained by the Ebbinghaus curves in that while it is logical to assume that almost any effect could occur when social issues are used as topics, a speech will have an effect in its intended direction if the effect is measured immediately. Thus, in situations in which there is immediate testing after the first communication a primacy effect should occur, yet a test after the second communication should modify the original primacy effect providing a weak primacy effect, or possibly no effect. When there is immediate testing after the last communication only, a recency effect is predicted, but the advantage of recency will dissipate rapidly with time, such that a delayed test may reveal a weak primacy effect, no effect, or a weak recency effect, depending on the degree of the time interval of the delay. This rather interesting result (previously stated by Jost's second law) is based on an assumption that there was an initially higher level of strength for the first than for the second message (see Figure 1).

Simply stated, with any two messages presented one after the other there is a higher degree of strength of association for the first, and subsequently less material forgotten over time for the first than for the second message. The greatest recency effect occurs when there is a long delay between first and second communications coupled with an immediate post test after the second communication, the strength of recency being minimal when the two presentations are contiguous, and testing delayed.

Fig. 1. Hypothetical forgetting curves for two competing communications. Note the higher initial starting position and final asymptote of line A in comparison with lines B or B’. A represents the first message, B represents the second message immediately after the first, B’ represents the second message one week after the first message, and the vertical slicings represent testings of attitude and recall. Condition 1 represents immediate testing after contiguous communications. Condition 2 represents delayed testing after contiguous communications. Condition 3 represents a delay between the communications with immediate testing after the last communication. Condition 4 represents a delay between the communications, as well as a delay of testing after the last communication.
In Figure 1 the solid line (line A) represents the contribution of an initial communication, its strength decreasing as time elapses. The two dotted lines represent the opposing communication presented at two distinct times. Line B represents the opposing communication occurring immediately after the first one, and line B' at any point in time represents an index of the net effects of the two communications in combination. The vertical line slicings in the diagram represent a measure of the net effect, designated as conditions one through four. Five predictions emerge stated in terms of the relative magnitude of the recency effect: \(3 > 4, 3 > 1, 3 > 2, 1 > 2,\) and \(4 > 2.\)

Miller and Campbell suggest that the finding of a recency effect in the study actually improves the case for a general law of primacy. The method employed in most order effects studies to date has been one in which subjects are tested immediately after contiguous communications. "This is a condition that is not optimal to the manifestation of either primacy or recency," they go on to state. 24 The inconsistent results found to date could be explained in terms of an always present primacy effect, with experimental conditions in the individual studies mediating and frequently masking the results by an also present recency effect. The finding of both primacy and recency in this study seems to suggest that "coming first gives a statement no greater probability of being remembered but does give it a greater probability of being believed." 25


25 Ibid.
Insko tested the Miller and Campbell theory using recall as a measure of retention and longer interval periods between the communications and measurements. As regards opinion change, his results paralleled those of Miller and Campbell. The results failed to support the theory that delayed measurement in the group with no time interval interpolated between the communications would produce more primacy or less recency than occurs without the delay. As regards retention as a function of the timing of communications, the longer the time interval between the opposing communications, the greater the recency effect on retention measured immediately after the second communication. A decreasing recency effect occurs as the time interval between the second communication and measurement increases.

Zdep and Wilson similarly tested the Miller and Campbell theory, only to uncover inconsistent results. Their design incorporated the use of a jury trial situation and differed from Miller and Campbell's model in the use of interpolated written material rather than interpolation of time between the communications. It was expected that the written material would cause a significant amount of forgetting, comparable to the interpolation of time. Contrary to the predictions from the Miller and Campbell model, under the second condition of contiguous speeches and immediate testing, a significant recency effect


was found. They point out, however, that the task interpolation was perhaps too short to cause forgetting, a factor doubtlessly affecting the outcome. In commenting on the Zdep and Wilson study, Miller suggested that a further experimental design error may have contributed to the results: the speeches used in the study were eighty percent shorter than those used in the Miller and Campbell study. In a later comment Wilson agreed with Miller stating that more research is required to "(a) present relevant data, (b) demonstrate the model's reliability through replication, and (c) demonstrate its robustness in the face of changes in supposedly irrelevant factors."  

Wilson and Miller also tested the Miller and Campbell model adding repetition as a variable. In terms of relative retention of material the Miller and Campbell model was confirmed dramatically. However, the opinion results indicated a marked discrepancy. Recency effects under condition three (time interval between communications with immediate testing after the second communication) were not more pronounced than recency effects for other conditions. In fact, recency in condition one (contiguous communications with immediate testing after the second communication) was as strong as recency for condition three.

One criticism of the Miller and Campbell study and other studies employing the same design is that they assume retention to be a cause of opinion, and that a measure of retention will signify a measure of opinion. Insko points out, however, that "both opinion and retention may covary as a function of the timing of communications and measures without one being causally prior to the other." In fact, Crano found that opinion and retention are not causally related. He stated: "It seems apparent then, . . . that the simple isomorphism of retention and attitude, so long an article of faith of the classical attitude theorists, simply does not exist." Certainly more research is needed to validate the assumptions implicit in the application of the Ebbinghaus negatively accelerated forgetting curves to persuasion.

Since Miller and Campbell assume persuasion as a function of retention, studies that test recall become relevant to a discussion of order effects in persuasion. While these studies use distinctly different topic material than is used in the persuasion studies, their applicability to primacy-recency is granted by the research of Ebbinghaus and subsequently confirmed by the Miller and Campbell model.

Adams and Doob found contradictory results when applied to the forgetting curve theory. Adams had two sets of advertisements drawn up for a particular product and placed on the inside front cover and first page of a magazine. In one set the advertisements were

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32 Crano, "Primacy vs. Recency," p. 94.

visually large on the inside front cover and small on the first page, while the second set was arranged in small-large order. Subjects perceiving them in terms of large-small remembered more about them than those perceiving them small-large, thus suggesting primacy—where Miller and Campbell would have predicted recency. Doob had subjects view a short newsreel of current events or read five short prose selections. Later, subjects attempted to recall as much as possible about the material seen. Doob found no significant result and concluded: "People may remember that which they have experienced intensely, but their recall may not be very accurate or detailed. People may remember that which they wish to remember, but only when a drive provides the incentive." Doob's results are supportive of the Miller and Campbell hypothesis in that delay after contiguous communications may yield a weak recency effect, or no effect, and perhaps primacy, if the delay is sufficiently long.

Jersild investigated subjects' retention of each of seventy biographical statements presented in three orders, initial, middle and final. His results, contradicting those of Miller and Campbell, suggested a primacy effect, in that statements at the very beginning were remembered better than those at the end. A later study by Ehrensenberger, replicating Jersild's method, however, found support for recency, stating: "Little difference exists between primacy and middle and between middle and recency, but a noticeable difference

34 Doob, "Initial Serial Positioning," p. 207.
is evident between primacy and recency."

Tannenbaum found further support for the theory as he investigated the relationship between order of presentation and retention of each of twelve items presented in a radio newscast. His results favored recency, as would be predicted from the Miller and Campbell model.

Sponberg's research is perhaps the most notable in retention of aurally perceived messages. While his study was primarily concerned with a pattern or arrangement of arguments within a single speech rather than arguments presented in separate speeches, order effects were definitely a side issue and his study then becomes relevant. In his study a twenty minute speech containing three arguments was presented aurally to two matched audiences in climax and anti-climax order. His approach to the issue of relative strength of arguments was different from that of prior researchers. He suggested that normally in rhetoric "space-emphasis is positively correlated with the importance of expressed ideas." The more important an idea is the more space it will receive in terms of development and explanation, and consequently will be perceived as proportionally more emphatic than other less developed arguments. Thus climax order was that


39 Ibid., p. 36.
arrangement with least space-emphasis occurring first, and anti-climax order was that arrangement with most space-emphasis occurring first. Loosely applied, Sponberg's findings contradicted those predicted by the Miller and Campbell model in that primacy occurred when the large space-emphasis argument occurred first with an immediate test after the communication. Miller and Campbell would have predicted recency. However, ten to thirteen days later the subjects were asked to complete a second retention test, and primacy was the result—a finding expected by the Miller and Campbell interpretation.

Gilkinson, Paulson, and Sikkink reported data that neither confirm contradict the hypothesis. Their research design was basically a replication of Sponberg's. They found no overall support for primacy or recency in message retention.

In sum, a predictive interpretation based on the Ebbinghaus negatively accelerated forgetting curve was advanced by Miller and Campbell in 1959. Since then the model has been tested on numerous occasions, being neither proven nor disproven, and certainly more research is necessary to validate the underlying assumptions.

The "Cognitive Complexity" Hypothesis

Through examining studies of order effects in impression formation Crockett has formed a theoretical framework based on the principle of cognitive complexity. Crockett derived his concept


from Warner's developmental psychology which suggests that the
development of cognition or any other psychological function involves
an increased "differentiation and articulation of elements, and,
simultaneously, an increased interdependence of elements as they are
integrated into a hierarchically arranged system." This suggests
that as new concepts are taken in by an individual, certain relation-
ships are established between concepts, and some concepts become
subordinate to others as they are hierarchically arranged. Subjects
high in cognitive complexity, then, would be expected to process
inconsistent information differently than individuals low in cog-
nitive complexity.

In 1946 Asch conducted an experiment in which he read a list
of positive-negative or negative-positive adjectives about an individual
to differing groups of subjects. He found that the subjects tended
to describe the person in much the same manner as that of the information
presented first. Similarly, Luchins gave subjects, in differing orders,
two one-paragraph statements about a boy, one of which pictured him
as an extrovert, the other as an introvert. Again the results
showed that the subjects were most affected by the first block of
information presented. However, Luchins, in a subsequent experiment
required subjects to respond on a questionnaire after reading the
first paragraph and again after the second one. His results were

42 Ibid., p. 49.
44 Luchins, "Experimental Attempts," pp. 62-78; Idem, "Primacy-
diametrically opposed to those achieved earlier.

Crockett suggested the following explanation. In the experiments without the written impression between the two communications, the items early in the sequence formed a context into which subsequent items could be assimilated; those not able to be assimilated into context would be ignored. In the experiment with the questionnaire between the two communications as well as after the two communications, the subjects were forced to extend their impression of the person thus forming a clear, well-rounded impression after hearing only the first message. When the second communication was read it clashed so markedly with the previously extended impression that the information could not be assimilated into the first theme, thus forcing a revision of the impression.

From this theoretical framework, a subject high in complexity, compared with a subject low in complexity, would be expected to "(a) form a less univalent impression from the first univalent block of information, and (b) to change this impression less completely upon presentation of a block of information opposite in valence." 46

An experiment designed to test this hypothesis used cognitively complex and cognitively simple subjects hearing four speakers presenting positive or negative descriptions of a fictitious young man named Joe. 47 After recording their impressions of Joe on a questionnaire they listened to four more taped recordings of descriptions of the same man, all differing in valence to those of the first tape.

47 Ibid.
Subjects then filled out questionnaires of their impressions.

The results indicated both favorable and unfavorable responses to the hypothesis. First, the univalence of all subjects' impressions after the first tape recorded description of the individual was substantially determined by the valence of the first communication. However, contrary to the hypothesis, subjects high in complexity were "not significantly less prone than the lows to record univalent impressions after hearing only univalent information." Secondly, while all subjects' impressions changed after hearing the second block of information, the relationship of cognitive complexity to the strength of the changes were as predicted: cognitively simple subjects showed recency effects as strong as their initial primacy effects, and cognitively complex subjects showed final impressions equably ambivalent.

Unfortunately, in this experiment all subjects responded on a questionnaire twice, making it impossible to determine whether the effects found by Asch, Luchins, and others in studies not incorporating an intervening impression would have occurred more completely in lows than in highs. An experiment by Rosencrantz tested this hypothesis. His results, however, did not completely support the hypothesis, in that the expected effects of cognitive complexity were not attained. Present, however, was a significant interaction of sex and complexity. As expected, men high in complexity showed ambivalent impressions, while those low in complexity showed strong recency

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48 Ibid.

effects when the information was presented in univalent blocks of information and less primacy when presented as alternating units in which positive and negative information was presented together. Among women the tendency was opposite that expected, with none of the group means differing significantly. The results were basically the same for univalence scoring and integration of the written impressions. Male subjects high in complexity showed less univalence in impression than lows while an opposing nonsignificant trend held true for women.

A study of cognitive complexity and performance stress effects upon integration of contradictory information was conducted by Supnick. As expected from the hypothesis, subjects under performance stress who read partially contradictory information about a boy showed significantly more univalence than did subjects responding under no stress. There was, however, no consistent relationship between cognitive complexity and univalence scoring or confidence in determining impressions, and there was no interaction of complexity with the stress condition.

Leventhal and Singer related the concept of cognitive complexity and changes of impression upon receipt of contradictory information. No clear cut relationship was found. They did report, however, that the


rating behaviors of cognitively simple subjects reflected concern for people's performance on surface dimensions (i.e., in terms of accepted norms of good performance), while those high in complexity searched for information bearing on the "inner substance of people." 52

Crockett's theoretical interpretation, at present, seems insufficient to explain order effects in impression formation. However, the recent research of Petronko and Perin supported the model in that when two units of information were presented to subjects high and low in cognitive complexity and a delayed measure was given after the last communication, a more pronounced primacy effect was the result for cognitively simple subjects than for cognitively complex subjects. When a task was interpolated between the two communications with an immediate measure after the last communication a more pronounced recency effect was found for cognitively simple subjects than for cognitively complex subjects. Even in light of this, the need for further research is implied.

The "Sensory Variation" Hypothesis

One of the more recent attempts to uncover a theoretical framework for the cause of order effects is that of Schultz. 54 His hypotheses were made on the basis of psychological work by Hebb, Scott, Lindsley, Malmo, and Samuels which suggests that by nature man will

52 Ibid., p. 225.


seek high psychological activation, thus responding more strongly to novel stimuli in a stimulus field. This sensory variation will immediately heighten one’s arousal and interest and provide vigor to ongoing behavior. As variations in stimulation are repeated, adaptation to the repetitive stimulation readily develops and alertness decreases. This process is termed sensory habituation by Schultz. From this perspective the following predictive hypotheses were formed:

(1) When a subject is newly initiated to a topic the first communication is perceived as novel and thus stimulation produced increases awareness and alertness. When the second communication is presented it will provide little variation in the level of activation, as it is less novel to the listener. Hence, the listener will retain focus on the initial material and respond accordingly, producing a primacy effect.

(2) When subjects are questioned after the initial and the second communication, it is assumed that in order to maintain the increased activation produced by the first communication, the subject will respond in direct opposition to his response on the first questionnaire as he completes the second questionnaire, yielding a recency effect.

(3) In instances where responses are required after the second communication but a time interval or task is interpolated between the communications to promote forgetting, the time interval or task interpolation may serve to dissipate the activation level induced by the initial communication and, therefore, the second communication is perceived as novel bringing about increased awareness and interest in it. A recency effect, or no effect may occur.

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55 Ibid., p. 129-130.
(4) In the experimentally induced primacy studies that utilize topics which are not novel, the first communication will not produce as much activation as it would have had it been an initial exposure. It will, however, be perceived as somewhat novel, attracting some arousal and interest, yet a pronounced primacy effect is the expected result.

(a) However, if the social topic has more intense stimulus value in terms of topic familiarity, controversy, or interest, the dynamics parallel those of hypothesis one and a more pronounced primacy effect should occur. Schultz argued that topic familiarity, interest, and controversy should have the same systematic status as the subject's lack of familiarity with the topic, the dimension involved in the "true primacy" study.

(b) In study situations as in the above postulate (4a), a recency effect should occur when a questionnaire is inserted between the two communications.

Lana suggested that "since Schultz makes the same predictions as set theorists (derived from differing initial assumptions) for his true primacy studies his success is equal to theirs." The problem with the sensory variation interpretation arises when one considers predictions from the experimentally induced primacy study postulates 4, 4a, and 4b.

Lund reported a primacy effect when questionnaires were presented after each speech, yet Schultz would have predicted a recency effect by postulate two. Sponberg found support for a recency effect among

57 H. F. Lund, "The Psychology of Belief. IV. The Law of Primacy
subjects who were questioned after the communications, yet Schultz predicts a primacy effect by postulates 4 and 4a. Cromwell found a recency effect when presenting questionnaires after the presentation of both arguments, and Schultz would have predicted a primacy effect by postulate 4. Hovland and Mandell also replicated the Lund study, finding inconsistent results with the theory.

Schultz is quick to point to studies by Lana for support for the sensory variation hypothesis. However, Lana points out:

Schultz does not report that, where postulate 4 and 4a predict the results for familiarity and controversy, they do not adequately handle Lana's results in an experiment where high interest groups yielded no effect and a medium interest group yielded a primacy effect. . . . In another study high controversy, in interaction with method of pretesting, yielded no order effect, and a medium controversy yielded a significant primacy effect.

Obviously, the sensory variation hypothesis, if not proven false, is made tenuous by the results of these and other studies. As indicated previously, more research incorporating Schultz's design is needed to suggest the general applicability of this model.

The "Contrast-Assimilation and Magnitude of Impact" Hypothesis

In persuasion a well pronounced principle dealing with how individuals perceive messages has been clearly presented—that of


58 Sponberg, "Climax and Anti-climax Order," pp. 35-44.


selective perception. In the perception of communications, some cues are attended to, others ignored, and yet still others may be misperceived. Sears and Freedman, and Berelson, Lazarsfeld, and McPhee have investigated this factor in how individuals perceive political candidates of opposing parties. They have isolated two variables that define the process. When an individual perceives a message to be closer to his own opinion than it actually is, this perception discrepancy is termed assimilation. When a message is perceived farther from one's own position than it actually is, contrast occurs. Assimilation has the inherent effect of making messages seem fair and impartial; contrast makes messages seem biased and propagandistic. Rosnow and Robinson contend that although there are other variables that may affect contrast-assimilation, messages that are already close to one's own opinion are displaced even farther.

This was the finding of an earlier study by Hovland, Harvey, and Sherif dealing with people's opinion of wet and dry counties and the acceptance of alcohol. Rosnow and Robinson termed the proximity of the recipient's stand to the speaker's stand the "communicant-recipient discrepancy." Other factors such as involvement with the issues, commitment to the issues, positively and negatively

63 Ibid.
65 Rosnow and Robinson, Experiments, p. 403.
perceived communications and communicators, and time are also important to the concept.

Hovland and Pritzker maintained that if a person tends to assimilate messages that are already close to his own position and contrasts those opposing, the "magnitude of impact" of a persuasive message should be determined by the existing communicant-recipient discrepancy. In effect, the amount of opinion change asked for seems to determine the amount obtained. In their study the items advocating the most extreme change had more impact than the items advocating only moderate change, which in turn had more impact than items asking for only slight change. The results indicated the amount of opinion change obtained depends largely on the amount advocated. Similar results were found by Goldberg; Fisher, Rubenstein, and Freedman; and Fisher and Lubin.

Anderson attempted to apply the principle to the primacy-recency phenomenon. He employed two successive communications advocating proportionally the same amount of change. In conditions such as this it was discovered that the second message had the advantage,  

in that the first message would move the opinions a given amount thereby increasing the attitudinal distance between the communicant and the recipient. If the second message was proportionally as effective as the first, because it demanded more than the first (due to the increased communicant-recipient discrepancy), it achieved greater change. As the model suggested, recency effects were discovered. He concluded: "These data make it clear that no general law of primacy or recency can exist, in agreement with Hovland's conclusion." 69

Anderson's Three Theoretical Frameworks

Anderson read subjects a set of personality trait adjectives and asked them how much they would like a person so described. 70 A generalized order effects paradigm was employed. Each set consisted of high or low value adjectives; into this set a block of three low (or high, depending on the initial block of adjectives) adjectives were interpolated at all possible ordinal positions. The results showed a straight line primacy effect; the net influence of an adjective decreased linearly with the ordinal position of the set. From this he formed three possible theoretical hypotheses.

The "Weighted Average" Model

In this model, the response to any set is a weighted mean of the scale values of the adjectives in that set. The scale value represents a favorableness dimension; the weight represents the

69 Ibid., p. 380.

influence or importance of the adjectives in the total impression. It is possible, therefore, to predict the response to all possible orderings of adjectives. The present study, however, did not test all the possible predictions in the model, and Anderson points out that further research is needed to prove its applicability.

The "Linear" Model

A second interpretation of the data may be considered in terms of a proportional change, or linear model derived from previous research by Anderson and Hovland. This model posits that impression develops step-by-step as each successive adjective is presented. The difference between this and the weighted average model is that the weighted average model considers only the final response, whereas the linear model considers the final response as the end result of a step-by-step building of impression.

The "Change of Meaning" Interpretation

Asch previously suggested this interpretation through his "directed impression" hypothesis. It is assumed that the initial adjectives in a set establish a directed impression that may change the effective meanings of later adjectives. In attempting to form a unified impression the subject seeks out the shades of meanings of later adjectives that fit in the directed impression established by the initial adjectives. This interpretation may not be consistent with the data, however, for unlike the previous two interpretations


which deal with changes in weight or importance of adjectives, this
one attributes primacy and recency to changes in scale value.

Chalmers, Stewart, and Anderson and Hubert gave support
for the weighted average model while Anderson and Norman argue
directly against the change of meaning interpretation. 73 Jaccard
and Fishbein offer no support for the change of meaning theory. 74

The "Attention Decrement" Hypothesis

A more recent theoretical model was suggested first by
Anderson and Barrios and later by Hendrick and Constantini. 75
These theorists suggested that primacy is due in part to a progressive
decline in attention over the adjectives in a given set. Further sup-
port for this theory was advanced by Stewart and Brink. 76 Jaccard
and Fishbein question it "as an explanatory tool for order effects." 77

73 Norman H. Anderson and Stephen Hubert, "Effects of Concom-
tant Verbal Recall on Order Effects in Personality Impression Form-
379-391; D. K. Chalmers, "Repetition and Order Effects in Impression
Formation," JESP 17 (February 1971): 219-228; Ralph H. Stewart, "Effect
of Continuous Responding on Order Effects in Personality Impression
Formation," JESP 1 (February 1965): 161-165; Norman H. Anderson and
Ann Norman, "Order Effects in Impression Formation in Four Classes

74 James J. Jaccard and Martin Fishbein, "Inferential Beliefs
And Order Effects in Personality Impression Formation," JESP 31
(June 1975): 1031-1040.

75 Anderson and Barrios, "Primacy Effects," pp. 346-350;
C. Hendrick and A. F. Constantini, "Effects of Varying Trait Incons-
istency and Response Requirements on the Primacy Effect in Impression

76 Stewart, "Continuous Responding," pp. 161-165; J. H. Brink,
"Impression Order Effects as a Function of the Personal Relevance of

77 Jaccard and Fishbein, "Inferential Beliefs," pp. 1031-1040.
The "Discounting" Hypothesis

A final theoretical answer to the question of primacy-recency was given by Anderson and Jacobson. They suggested that a subject may not give equal weight to all traits presented by the researcher, and hence may discount those traits that are inconsistent with the other traits in a stimulus set. Since most of the impression formation studies use opposing blocks of information, it is conceivable that the subject would discount the entire second block. Hendrick and Constantini found support for this theory with significant primacy effects, while other research by Anderson, Shafer, and McGinnis and Oziel seems to credit this interpretation also.

Concomitant Factors Affecting Primacy-Recency

Concurrent to research asserting the causes of primacy and recency in persuasive communications, recall, and impression formation, recent research has sought to detect specific factors that may influence order effects. Interestingly, Crano observed that most of the research in this area has been the "small scale, atheoretical variety." From this effort six areas of research concentration emerge.

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"Commitment" Factors

Hovland and Mandell have investigated the effects of inserting an anonymous questionnaire between successive pro and con arguments. It was believed that expressing one's belief on a questionnaire after hearing only a single side may force the recipient to commit himself to a position adopted after hearing only the first communication. Lund and Knower were previously concerned with shift of opinion based on visually perceived messages. Subjects were to read affirmative and negative or negative and affirmative arguments and then respond on a questionnaire. It was found that the first argument showed a more marked effect than the second argument. Cromwell also constructed two affirmative and negative arguments on an issue, but subjects were required to respond on a questionnaire between the communications as well as after the last communication. He found a significant recency effect. Hovland and Mandell suggested that a "formulation-commitment" dimension was present in the Lund and Knower studies, but absent in the Cromwell study. The subjects were forced to formulate an opinion or attitude based on the first presentation in the Lund and Knower studies that was not changed with much persuasion through the second speech. From the basis of


their research, Hovland and Mandell concluded that "it appears unlikely that merely expressing one's opinion on a questionnaire will significantly influence one's subsequent opinion on an issue." \(^{84}\)

Hovland, Campbell, and Brock investigated a more intense form of commitment to a position after hearing only one side of an issue. \(^{85}\) Primacy effects were investigated among (a) subjects who were asked to write their opinions for a publication to be read by their peers in a magazine, and (b) control subjects who wrote their impressions anonymously. They concluded that "mere private commitment in terms of filling out a questionnaire, does not appear to have any decisive effect on any of the issues studied to date." \(^{86}\) A subject who considers changing opinion after hearing a second communication may anticipate some negative social reinforcement from his associates if they become aware of his change. When the change in attitude is anonymous, the effects are much less clear-cut.

Stone's research dealt with a more pragmatic use of affirmative-negative argument structure, namely that of the judicial system. \(^{87}\) He predicted primacy in the judicial system. As the prosecutor presents the first strong argument in the structure, it would seem that the overall results would be biased in his favor. The experiment varied the order of testimony of trial material. Prior to reading strong

\(^{84}\) Hovland and Mandell, "Is there a Law of Primacy?" pp. 13-22.


\(^{86}\) Ibid., p. 31.

final evidence from the prosecutor, sixty-five university students acting as jurors read statements that were identical in all respects, except that they came from either prosecution first, defense second, or defense first, prosecution second. Stone found a pronounced primacy effect. Using the same experimental design, however, Wallace found opposing results—a pronounced recency effect.

Important here is that Stone's decision to gather tentative commitments from the subjects during the procedure enabled him to analyze the effect of premature commitment on final attitude change. The results seemed to suggest that "premature commitment...is a possible biasing factor in a jury's trial." They do not support Hovland's premise that commitments must be made public to produce concern. In fact, data from Stone's study supported findings by Bennet that private commitments are just as effective as public commitments in yielding a primacy effect.

"Need Arousal" Factors

Cohen suggested that information relevant to need satisfaction when presented after strong needs have been aroused will be regarded as more satisfying than information presented before need arousal.

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The first situation would be expected to also produce greater acceptance of the material. The communication order of arousal-information, in fact, did receive more acceptance of the communicator's conclusions than the order of information-arousal. It seems that the information-arousal order was perceived as more ambiguous than the alternative order, and was also perceived as "lacking in cognitive clarity and reasonableness."  

Moreover, the order of arousal-information was more effective in influencing opinion for subjects with relatively weak desires to understand, than for those of high cognitive need. It was found that subjects high in cognitive need were influenced to about the same extent regardless of information presented. Conversely, low cognitive need subjects tended to respond positively to the arousal-information order and negatively to the alternate order, information-arousal.

"Immunization" Factors

Stone attempted to induce resistance to the final appeal in judicial proceedings by introducing refutation to arguments not yet presented by the prosecution. The finding of a primacy effect in the two approaches to immunization supports the theory that protecting a belief by prior refutational immunization is more effective than trying to restore the belief after it has been successfully attacked. Again, however, Wallace, using the same experimental design, found that neither prior warnings nor the position of the warnings

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92 Ibid., p. 93.

had any significant influence on order effects. Other researchers have investigated immunization, though their designs were not structured to determine primacy-recency effects.

"Reinforcement" Factors

A reinforcement or conditioning hypothesis was initiated by McGuire and later by Rosnow. The ability of a researcher to predict a primacy or recency effect may depend on his ability to locate a rewarding or punishing situation in the communication context. Lana concluded that it is problematic whether or not reward or punishment as reinforcers may be isolated as factors, as an individual may be convinced of an argument in the face of opposition without the presence of reward or punishment. McGuire suggested that a conditioning trial occurs when a subject’s response is rewarded, while an extinction trial occurs when no reward is given for the response. His predictions are derived from Hull’s learning theories.

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94 Wallace, "Primacy and Recency Warnings."
persuasiveness of his later messages depend in large measure on the extent to which agreement with those earlier arguments was rewarding for the recipient. McGuire compared the two orders of messages presented by a single communicator. In one, conclusions consonant with the motives and desires of the audience were presented first with opposing arguments following, and the other had the sequence reversed. The conditioning theory maintained that when reinforcing messages are transmitted first there is a stronger conditioned stimulus for eliciting responses that lead to the acceptance of the position advocated (i.e., paying attention to and learning from the communicator's remarks). Conversely, responses leading to nonacceptance should be conditioned to the communicator who presents undesirable messages first, as they are punishing. His results supported the thesis.

Rosnow, unlike McGuire, was concerned with successive opposing arguments in a single speech. He felt that reinforcement before the opposing arguments would yield primacy, and reinforcement after the arguments would yield recency. The results showed no consistent effect, yielding McGuire's "conditioning" hypothesis somewhat tenable.

"Conflict-Avoidance" Factors

Janis and Feirabend presented the following hypothesis:

When opposing arguments have a very low probability of being spontaneously salient for the audience, an authoritative communication will be more effective if the con arguments are

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100 Rosnow, "Opinion Change and Order of Presentation."
presented after, rather than before the major pro arguments. That is, con arguments are expected to create less interference with audience acceptance if given toward the end of an authoritative communication rather than near the beginning. ¹⁰¹

This suggests that pro arguments in a communication invoke approach tendencies toward the communicator while the con arguments invoke audience avoidance tendencies. It should be noted that this hypothesis is specifically formulated for nonsalient con arguments (i.e., those which the audience has never heard before or remember during the communication). If, for instance, the con arguments are made salient at the very beginning of a communication, the recipients' avoidance motivation becomes strong, increasing the probability that the remainder of the communication will be ignored or silently disputed. The results of the study supported the theory.

Investigation of Communicant and Recipient Personality Variables

Few researchers have investigated the area of personality variables on primacy-recency effects. A summary of the most pertinent studies follows.

Brown analyzed the effect of subjects' introversion-extroversion tendencies, neuroticism, and degree of self-esteem on primacy-recency. ¹⁰² Her results uncovered no significant relationship between any of the variables and order effects.


Dodd sought a relationship between dogmatism and order effects among a group of subjects classified low or high in dogmatism. He found no significant relationship. As a possible explanation he surmised that in relation to other factors such as commitment and assimilation, dogmatism appears a relatively unimportant characteristic.

Steininger and Eisenberg investigated the degree of dogmatism and Machiavellianism of subjects in relation to order effects. None of the ratings systematically correlated with order effects.

Yontef attempted to assess the effects of ego involvement on the order of presentation. Subjects were divided into high and low involvement groups and subjected to two three hundred word communications (either pro-con or con-pro) about aggressiveness and submission. Involved subjects were influenced by primacy, while less involved subjects were responsive to recency.

Stern, Lana, and Pauling investigated the interaction of subjects' self-esteem, degree of anxiety toward the communication and relevance of topic. Their results suggested the following


six hypotheses: (1) With a relevant topic, subjects yielded to a primacy effect in all conditions. (2) With a nonrelevant topic, subjects yielded to a primacy effect when the neutral speech preceded the fear arousing speech, and recency in the other order. (3) Subjects high in esteem yielded to a primacy effect when the neutral speech preceded the fear arousing speech, and to recency in the other order. (4) Subjects low in self-esteem yielded to a primacy effect when the fear arousing speech preceded the neutral speech, and a recency effect when the neutral speech preceded the fear arousing speech. (5) Subjects with high anxiety showed primacy effects when the neutral speech preceded the fear arousing speech, and a recency effect when the fear arousing speech preceded the neutral speech. (6) Subjects low in anxiety yielded to a primacy effect when the fear arousing speech preceded the neutral speech, and a recency effect occurred when the neutral speech preceded the fear arousing speech.

Ochs attempted to determine what effects age has on primacy-recency. With three hundred twenty subjects of differing ages (9, 13, 17, 21, 70) he varied the presentation of communications about a hypothetical boy being extroversion or introversion. It was found that all subjects described the boy on the basis of the first block of information. The greater tendencies to describe the boy least in terms of the first block of information occurred as an increased function of age. Primacy was stronger between the ages of 13 and 17 than between 17 and 21.

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In the only study to assess order effects in relation to communicator personality variables, Rosenbaum and Levin had subjects respond to favorable and unfavorable statements about an imaginary character presented in different orders by a highly credible source and a source low in credibility. Reliable recency effects were obtained. Additionally, responses were shown to vary as a function of the credibility of the source. They concluded: "Informational items of a given value receive more weight when supplied by a highly credible source than when supplied by a low credible source." 109

On the basis of existing research in personality characteristics of subjects it appears that dogmatism, Machiavellianism, neuroticism, and introversion-extroversion display little effect on primacy or recency. Increased age, ego involvement, self esteem, anxiety, and message relevance does seem to influence order effects. Certainly more research is called for in this area, replicating the studies and incorporating other personality variables in the designs.

Investigation of Mode of Presentation

Cowen investigated the effects of written and film communication in the area of order effects in impression formation. 110


109 Ibid., p. 173.

It was discovered that written communication often yielded primacy and film communication created no effect. When written and film communication were combined, film elicited a greater response in either ordinal position.

**Rationale**

As may be noted in the preceding review of literature, there exists no study which incorporated the following five variables in one research design: sex, dogmatism, and receivers’ self esteem, order of presentation, and message relevance as these differentially affect attitude change and recall. To this extent the current research is justified.

Secondly, and to a lesser degree, studies which have analyzed certain variables independently in the context of persuasion have reached conflicting results. For example, the research of Crockett, and Mayo and Crockett supported differences of response between cognitively simple and cognitively complex subjects. Later replications by Supnick, and Leventhal and Singer failed to uncover differences. This discrepancy exists in other areas as well.

Finally, the present study is unique in the application of statistical methods to assess relationships of the variables, as well as statistical models to assess differences among the variables—the normal procedure in order effects studies to date. The application of multiple correlation and regression analysis to the question of order of presentation in persuasion will yield a regression equation whereby predictions of attitude change and recall may be made from knowledge of the presence or absence of the predictor variables.
Summary

Jones and Berglas stated that "on an actuarial basis there is no question that primacy effects are more common than recency effects when subjects are forced to process inconsistent information." Such a conclusionary statement seems rather hasty in light of the large body of conflicting results reviewed in this chapter. At best, one should admit with reserve that the evidence to date is quite contradictory, and a mere plurality advantage cannot serve to determine the most effective presentational order. Indeed Wilson envisioned this when he noted that the primacy effect is an easily nullified effect.

Certainly more systematic research is implied. One possible guide for future reference may be the model "Who says what to whom with what effect?" Only recently has research focused on some factors at work during the communication process that may affect primacy-recency, rather than attempting to prove a general law for order effects. Such research has focused on differing constituents of the communication situation exemplified in the above question. For instance, Dodd, Steininger and Eisenberg, Brown, Yontef, and Ochs have focused on the recipient—the "whom" of the simple model—and certain personality variables that may influence order effects. Research

112 Wilson, "Primacy or Recency," pp. 1135-1140.
has also attempted to analyze the effects of commitment on primacy-recency, as well as the audience's ability to remember or recall statements of a communication. Crockett's investigation concerned subjects' cognitive complexity, while Schultz's theoretical interpretation focused on the subjects' psychological activation. Hovland and Fritzker and others have applied the social judgement involvement theory in their contrast-avoidance interpretation. Anderson and Jacobson have applied Festinger's dissonance theory to their discounting interpretation.

Similarly, research has also focused on the communication—the "what" of the model—and variables such as interestingness of topic, strength of argument, familiarity of topic, and consonant versus dissonant information. However, the list of communication bound or message related variables studied to date is far from inclusive.

Surprisingly, research in the mode of presentation is severely limited. Rosnow argued that if attention to the communicator and comprehension of the message are necessary conditions to be established for opinion change, then the mode of presentation is a primary concern.\textsuperscript{114} However, only two studies have analyzed differing effects of various media presentations. Cowen compared the effect of film and written communications, while Lana compared the effect of live and tape recorded presentations.\textsuperscript{115} Obviously further research varying the mode of presentation is implied.

\textsuperscript{114}Rosnow, "Whatever Happened to Primacy?" pp. 10-31.

Similarly, there is a dearth of research efforts focusing on the communicator—the "who" of the model. Janis and Feirabend investigated the communicator's ability to introduce opposing arguments to an audience to his best advantage. Stone attempted to find the best method to induce resistance to following communications through immunization. Luchins and Wallace investigated the effect of statements warning against order effects in an effort to minimize the occurrence of primacy. Wilson considered the presentational manner and delivery aspects of a speaker, while Rosenbaum and Levin sought the relationship of source credibility and order effects.

It is further imperative that researchers take the initiative to broaden and expand the borders of order effects research in an effort to strengthen the presently weak operational definition of the concepts of primacy and recency by providing more absolute, concrete, and exact predictive models. On the other hand, replications of all the studies included in this review are imperative to improve or discredit the predictive accuracy of existing models.
CHAPTER II

RESEARCH QUESTIONS, PROCEDURES, AND DATA ANALYSIS

The purpose of this chapter is to present the research questions and describe the procedures for the study and method of data analysis. First, the chapter presents the research questions and expected results. The second section notes the procedures and subjects employed in the study. The third section explains the statistical techniques applied to the research.

Research Questions

This section sets forth the research questions developed from issues raised in the preceding review of literature, and presents the expected functional relationship of the selected independent variables with the criterion variables. The expected relationships among the variables are based on observations of the results from previous studies in the area.

Research Question 1

How may certain personality and demographic variables affect attitude change and recall in the general order effects paradigm? First, in relation to self-esteem, it might be expected that the individual of high self-esteem may have a greater tolerance for ambiguity

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All data operations and statistical analyses cited in this study were performed by appropriate computer techniques using SPSS.
than the individual with low esteem and may wait to hear both sides of the issue before making a decision. On the other hand, the individual with low self-esteem may form an early attitude after the first persuasive message and reject the latter, due to a low tolerance for ambiguity, yielding a primacy effect.

Moreover, Leventhal and Perloe have suggested that persons with low self-esteem are more persuasible when the message is more pessimistic, negative, and threatening in tone. Thus, there may be some relationship between low self-esteem and acceptance of a con argument, regardless of order.

Secondly, to date no order effects study has assessed the effects of sex on attitude change and recall. Perhaps this is due to a commonly held belief that there is no cultural distinction between male and female stereotypic responses to communication messages which involve issues unrelated to the current sex superiority/equality conflict. Messages used in primacy-recency studies typically avoid such issues to inhibit sex bias. However, undefined differences may be present when the sex factor is coupled with other variables such that males low in self-esteem may have a greater tolerance for ambiguity than females low in self-esteem, which would provide a more pronounced primacy effect for the males. Or, perhaps males who are highly dogmatic would tend to differ from highly dogmatic females. Overall, however, there is expected little systematic bias of sex-specific responses.

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Finally, in relation to receiver dogmatism, Dodd found that as dogmatism scores increased subjects tended to score lower on attitude toward revenue sharing. As a speculative explanation he stated: "As a general personality characteristic dogmatism may accompany a negative bias 'set'. Because they are more closed-minded, highly dogmatic subjects may react negatively regardless of message order." As a self-criticism, however, he pointed out that the small N size (40) may have accounted for the results, and suggested that further research should take this into account. This researcher surmises that if there is a negative bias "set" among highly dogmatic subjects it will manifest itself through the attitude and recall measures.

Research Question 2

How may topic relevance affect attitude change and recall in the general order effects paradigm? Generally this researcher expects to find that as message relevance increases so will receiver interest and attention, regardless of sex, dogmatism, and self-esteem. As was found in earlier studies using two-sided communications, a general primacy effect is expected with high relevance and a recency effect may occur with low relevance.

Research Question 3

How may order of presentation affect attitude change and recall in the general order effects paradigm? In terms of a main effect, prior research is unclear as to the direction of the effect, but differences in response are expected to occur on the basis of

the previously discussed variables.

Research Question 4

Is recall an adequate predictor of the persuasiveness of a particular communication? It is accepted by many that attitude change differences induced as a function of attention and message order are mediated by differences in retention of material. In fact, Miller and Campbell founded their predictive model on this premise. If this relationship is sound, one would expect attitude change scores to correlate highly with retention scores.

Research Question 5

Of the independent variables given, what combination predict attitude change and recall? The researcher is interested in examining the linear relationship of the five independent variables with the criterion variables of attitude change and recall. It is expected that a significant amount of the variation in attitude change and recall can be explained by linear dependence upon dogmatism, self-esteem, sex, relevance of material, and order of presentation. The statistical technique employed to uncover relationships will be regression analysis. The analysis will yield an equation for the prediction of attitude change and recall, as well as present rank orderings of importance in the amount of variation explained by the variables.

4 It should be noted that although they presume the mediation of retention on attitude change, their findings indicated very little interrelationship. Similarly, Crano, "Primacy versus Recency," p. 94, found little interrelationship. Crano goes on to suggest that the age-old isomorphism of retention and attitude change simply does not exist.
Procedures

Creation of Speeches

Speech topics for this experiment were derived from the basic speech courses at Western Kentucky University. One class of approximately thirty students was asked to supply the researcher with speech topics that were relevant and others which were irrelevant to students enrolled in basic speech courses at Western. Relevant topics were defined as those which were interesting, controversial, and familiar, while irrelevant topics were defined as those which were not interesting, controversial, nor familiar. From this collection of topics a highly relevant and a highly irrelevant topic were chosen by means of having two other classes rank each topic. The highly relevant topic concerned a co-educational dormitory policy for Western, while the highly irrelevant topic concerned the national policy of sunshine laws. A two hundred word pro and a two hundred word con essay were written about each topic in a manner that allowed either essay to precede the other without affecting the flow of thought so that each subject in the experiment would read a composite speech of four hundred words in pro-con or con-pro order. The content of the speeches was factual in nature, included supporting evidence balanced for both sides in terms of quantity and quality, and evidentiary sources in all instances were omitted to control for the variable of message authoritativeness which might have had a biasing effect on the highly dogmatic subjects (see Appendix A). To assure equality among speeches twelve students in basic speech classes were asked to read each speech and evaluate it on a semantic differential
in terms of logic, clarity, factual bases, support evidence, emotionality of language, and intensity of language. Interjudge reliability coefficients were then computed to ascertain the correlation of each speech with the others. The results are recorded in Table 1.

Variables Studied

Dependent Variables

The Diab method of social judgement and ego-involvement was selected as a basis for attitude measurement. Subjects responded on a nine point semantic differential type scale to three sets of bipolar adjectives: good/bad, wise/foolish, and valuable/worthless (see Appendix B). Rather than simply asking the subjects to indicate their feelings toward the concept by marking the one position with which they agree (the technique employed in the typical semantic differential type scale), the subjects were asked to mark all the positions they would be willing to accept, all the positions they would be willing to reject, and all the positions about which they had no commitment. They were also instructed to circle the one position with which they most agreed. To simplify instructions, percentage figures were placed under the nine points along the continuum such that the two end positions represented 100% good, wise, and valuable, and 100% bad, foolish, and worthless; the next two positions toward the middle represented 75% good, wise, and valuable, and 75% bad, foolish, and worthless; the next two positions, 50%; the next two positions, 25%; and the remaining position in the middle represented 0% good, wise, and valuable, and 0% bad, foolish, and worthless. The percentage figures also served two other functions:
<table>
<thead>
<tr>
<th></th>
<th>Pro Co-ed Dorm</th>
<th>Con Co-ed Dorm</th>
<th>Pro Sunshine Law</th>
<th>Con Sunshine Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro Co-ed Dorm</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(p=****)</td>
<td></td>
</tr>
<tr>
<td>Con Co-ed Dorm</td>
<td>-0.6219</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(p=0.037)</td>
<td>(p=****)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pro Sunshine Law</td>
<td>0.8578</td>
<td>-0.6787</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(p=0.002)</td>
<td>(p=0.022)</td>
<td>(p=****)</td>
<td></td>
</tr>
<tr>
<td>Con Sunshine Law</td>
<td>-0.6664</td>
<td>0.6878</td>
<td>-0.7875</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(p=0.025)</td>
<td>(p=0.020)</td>
<td>(p=0.006)</td>
<td>(p=****)</td>
</tr>
</tbody>
</table>

N=12
It allowed for more extreme positive or negative attitudes since one may have indicated his opinion that the concepts were 100% good, wise, and valuable, or 100% bad, foolish, and worthless, as well as increased the presumption of interval level data, as the distance between any two points along the continuum appears equal to the distance between any other two points along the continuum. The scales were identical for both the pre- and posttest attitude measures.

A number of procedures were used to index subjects' attitudes. A description of the operationalizations follows. The first procedure concerned the one position with which the subjects most agreed. The average of the scale values for the three positions (one from each continuum) was computed for each subject yielding the subject's attitude on the pre- and posttests as is typically done in semantic differential scales. Changes from the pre- to posttest were noted by subtracting the posttest score from the pretest score.

Secondly, the researcher was concerned with the simple frequency of response (i.e., the number of acceptable positions, rejection positions, and noncommitment positions). Changes in frequency were determined by subtracting the pretest frequency for each type of response from the frequency of posttest responses. It should be noted that since the subjects were asked to respond on each position on the continua (twenty-seven positions in all), a change after the manipulation in any one domain (acceptance, rejection, noncommitment) subsequently affected changes in the other domains. For example, if on the pretest a subject rejected eight positions out of the twenty-seven possible, and on the posttest rejected only four positions, the number of acceptable and/or noncommitment positions had to increase to
account for the extra four spaces so generated.

Thirdly, the researcher was concerned with the average acceptance, rejection, and noncommitment position across all three scales. The scale values for every response in any one domain were added and the sum was divided by the frequency of responses for that domain. The results yielded the average position with which the subjects agreed, the average position which they rejected, and the average position with which they had no commitment. The average acceptance position produced similar scores to the single position with which they agreed most. Changes in attitude were determined by subtracting the pretest averages from the posttest averages. This averaging of latitudes yielded a clearer measurement of subjects' attitudes than can be expected from having the subjects indicate the one position with which they agreed most. The latter, for instance, assumes that a subject's attitude may fall at one point along the continuum, while the former assumes attitude to be a range of points along the continuum with establishable boundaries of tolerance for the concept above which one is unwilling to accept (or reject) more, and below which one is unwilling to accept (or reject) more. This approach seemed to deal more with the question "How much are you willing to agree that the concepts are good/bad, wise/foolish, and valuable/worthless?" than the typical semantic differential type approach. Also, in the typical approach subjects who respond similarly on moderate or neutral positions may not have similar or identical meanings of the concept. Some may have had a neutral stand in which they were willing to accept that the concepts had some merit, while others may have had identical neutral positions, yet were willing to
accept that the concept had little merit. Only the method employed
in this study adequately differentiated between subjects' neutral
positions. Finally, the use of nine points rather than the tra-
ditional seven allowed for greater differentiation in subjects' 
attitudes as it offered them a wider range of possible attitude
distinctions.

The Diab method has not been extensively used in communica-
tion research to date, due in part, perhaps to its recent inception. 5
However, both comparative studies indicating a high degree of cor-
relation between it and other measurement techniques, and the explicit
advantages of the system, are rapidly drawing advocates. 6

To assess the effect of order of presentation, dogmatism,
estee, sex, and message relevance on recall a six-item multiple
choice questionnaire was constructed from the content of the material.
Three questions were taken from the pro and three were taken from the
con argument (see Appendix C). The number of correct responses served

5 The technique was first mentioned by Lutfy N. Diab in "Some
Limitations of Existing Scales in the Measurement of Social Attitudes," 
Psychological Reports 17 (1965): 427-430. Diab first reported the
use of the technique in "Studies in Social Attitudes: III. Attitude 
Assessment Through the Semantic Differential Technique," JSP 67 (1965):
303-314. The procedure has also been used in the following studies:
David Mortensen and Kenneth K. Sereno, "Ego-Involvement and Dis-
Kenneth K. Sereno and David C. Mortensen, "The Effects of Ego-Involved 
Attitudes on Conflict Negotiation in Dyads," SM 36 (1969): 8-12; 
Kenneth K. Sereno and Edward Bodakin, "Ego-Involvement and Attitude 
Change: Toward a Reconceptualization of Persuasive Effect," SM 
39 (1972): 151-158. See also Margaret L. McLaughlin and Heather 
Sharman, "A Scalar Distance Model for the Measurement of Latitudes of 

6 James C. McCroskey, "Latitudes of Acceptance and the
as an index of the amount of material recalled.

**Independent Variables**

In 1965 Rokeach presented a forty-item scale to measure general authoritarianism or closed-mindedness.\(^7\) Since then, numerous investigators have advanced shorter scales to measure closed-mindedness or dogmatism. One such scale is the twenty-item short scale developed by Troldahl and Powell in 1965.\(^8\) They reported an interitem reliability of .84 for the original forty-item scale of Rokeach.

From this scale shortened scales were developed from the best ten, fifteen, and twenty items. The following reliability coefficients were approximated for each version of the scale:

- 40-item scale = .84
- 20-item scale = .79
- 15-item scale = .73
- 10-item scale = .66

To determine the validity of the construct measures, each scale was then correlated with the original forty-item scale using two samples. The following results were obtained:

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-item vs. 40-item score</td>
<td>.95</td>
<td>.94</td>
</tr>
<tr>
<td>15-item vs. 40-item score</td>
<td>.91</td>
<td>.73</td>
</tr>
<tr>
<td>10-item vs. 40-item score</td>
<td>.88</td>
<td>.79</td>
</tr>
</tbody>
</table>

For the purpose of this study ten items from the fifteen item scale were selected on the basis of the following criteria:

---


(1) Each item selected must have had an item-total score correlation of above .45 from the Troldahl and Powell results, and (2) items must not blatantly refer to religious or political values (see Appendix D). The items were then applied to a Likert-type format in which each subject indicated the degree of agreement with each statement. The alpha level attained for the ten-item scale so created was .58. From this ten-item scale, a six-item scale was developed with an alpha of .63. Subjects high in dogmatism were differentiated from subjects low in dogmatism by a median split on the basis of this six-item scale.

To assess subjects' degree of self-esteem a ten-item semantic differential was composed of items selected from a number of existing scales (see Appendix E). As a very general index of the validity of such a scale, a pilot test group of basic speech students (N=25) completed the scale and their scores were correlated with scores generated from their instructor's estimation of the degree of esteem each subject had. The validity coefficient attained was .53 (p=.003). The interitem reliability of the ten-item scale for the pilot test group was .81 (p<.05), while the interitem reliability among experimental subjects was .70 (p<.05).

Data Collection

The administration of the experiment took approximately twenty-five minutes. Subjects were 196 students in several basic

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9 Robinson and Shaver, Measures, pp. 76-118. The items were taken from scales previously devised by Janis and Field, pp. 76-80; Rosenberg, pp. 81-83; Coopersmith, pp. 84-87; Berger and Phillips, pp. 107-112; and Worchel, pp. 113-118.
speech courses at Western. The material was randomly distributed to the subjects in booklet form, and subjects were asked to wait for further instructions. Subjects were then given a specific amount of time to complete each section in the booklet, the sections being (in order) the dogmatism scale, the esteem scale, the pretest attitude measure, the message, the recall questionnaire, and the posttest attitude measure. The experimenter answered no questions which referred to the content of the material or nature of the experiment. Informal questioning after the sessions increased the experimenter's confidence that the topics were highly relevant and irrelevant. For instance, when asked, "Some of you received speeches dealing with co-ed dorms, and others received speeches dealing with sunshine laws. Were the topics relevant to you?", one male responded, "Though I am strongly against co-ed dorm policies, I could care less about sunshine laws." Some who received the co-ed dorm speech asked, "What are sunshine laws?" Others suggested, "Sunshine laws are not really pertinent to us, whereas co-ed dorm policies are."

Data Analysis

The data were subjected to a number of statistical procedures to determine differences and relationships. First, ten three-way analyses of variance were computed to determine main and interaction effects. The analyses represented all possible two-way and three-way interactions. F ratios with significant differences were then

10 The actual sample, after attrition, was 165. Subjects were selected in the sample only if a major portion of all of the items from each section in the booklet was completed. In instances of the omission of a few items, the absent responses were coded as missing data.
subjected to the t-test for differences among several means, a post-
hoc multiple comparison test.

The data were also subjected to multiple correlation and regression analysis. The criterion variables were attitude change and recall, with dogmatism, sex, self-esteem, relevance of topic, and order of presentation serving as independent variables. The predictor variables were brought into the equation stepwise from the best to the worst. That is, the variable that explained the greatest amount of variation in attitude and recall was entered first, the variable that explained the greatest amount in conjunction with the first was entered second, and so on. The criteria for selecting variables included in the equation placed little restriction on the stepwise regression. Specifically, a variable was entered if its F ratio (computed in its test of significance for the regression coefficient) was greater than .01, and the tolerance (the proportion of the variance of that variable not explained by the independent variables already in the equation) exceeded .001. This meant that "a variable may be entered if the proportion of its variance not explained by the other variables merely exceeds 0.1 percent." Finally, cases with missing values were automatically eliminated from all calculations through listwise deletion, which meant that a case was eliminated if that case contained a missing value for any of the five independent variables. In sum, variables were excluded from the equation if they failed to contribute to the

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overall explanation. As a consequence, some equations incorporated all five variables, while others incorporated only four.
CHAPTER III

RESULTS

The purpose of this chapter is to report the results of the experimental manipulation. To facilitate the report the data are presented in terms of the research questions from chapter two.

Research Question 1

How may certain personality and demographic characteristics (i.e., receivers' sex, dogmatism, and self-esteem) affect attitude change and recall in the general order effects paradigm?

Attitude Change

One significant interaction effect surfaced in terms of the frequency of acceptance. This effect concerned a specific sex difference such that females high in dogmatism and esteem responded with more acceptance positions on the posttest than on the pretest, while males high in dogmatism and esteem responded with fewer acceptance positions on the posttest than the pretest (2.0 compared with -0.30, p=.054). It appears that females high in dogmatism and esteem shifted opinion to a greater degree than males high in dogmatism and esteem (see tables 2 and 3).

In terms of the average acceptance, rejection, and noncommitment positions, two significant three-way interactions were uncovered.
TABLE 2

ANALYSIS OF VARIANCE:
FREQUENCY OF ACCEPTANCE POSITION CHANGE SCORES BY
ESTEEM x DOGMATISM x SEX

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esteem</td>
<td>0.002</td>
<td>1</td>
<td>0.002</td>
<td>0.000</td>
<td>0.998</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.603</td>
<td>1</td>
<td>0.603</td>
<td>0.058</td>
<td>0.810</td>
</tr>
<tr>
<td>Sex</td>
<td>9.254</td>
<td>1</td>
<td>9.245</td>
<td>0.893</td>
<td>0.346</td>
</tr>
<tr>
<td>2-Way Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esteem x Dogmatism</td>
<td>0.299</td>
<td>1</td>
<td>0.299</td>
<td>0.029</td>
<td>0.865</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>0.173</td>
<td>1</td>
<td>0.173</td>
<td>0.017</td>
<td>0.897</td>
</tr>
<tr>
<td>Dogmatism x Sex</td>
<td>12.384</td>
<td>1</td>
<td>12.384</td>
<td>1.197</td>
<td>0.276</td>
</tr>
<tr>
<td>3-Way Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esteem x Dogmatism x Sex</td>
<td>38.994</td>
<td>1</td>
<td>38.994</td>
<td>3.768</td>
<td>0.054</td>
</tr>
<tr>
<td>Explained</td>
<td>62.029</td>
<td>1</td>
<td>8.361</td>
<td>0.836</td>
<td>0.543</td>
</tr>
<tr>
<td>Residual</td>
<td>1593.75</td>
<td>154</td>
<td>10.349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1655.79</td>
<td>161</td>
<td>10.284</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Change Score</td>
<td>N size</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-------</td>
<td>--------</td>
<td>--------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.40</td>
<td>1.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20)</td>
<td>(18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Dogmatism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.77</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(22)</td>
<td>(16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Dogmatism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.30a</td>
<td>2.00a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20)</td>
<td>(15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Common subscripts are significantly different, p=.054.
Tables 4 and 5 indicate the significant differences present in the interaction of esteem, sex, and order in changes of the average acceptance position. Tables 6 and 7 indicate the significant differences present in the interaction of esteem, sex, and order in changes in the average rejection position. In examining the two interaction effects a number of similarities are found. These similarities serve to increase the assurance of significance, as the effects tend to take on a pattern in which changes in one domain affect changes in the others. As would be expected, increases in the average acceptance position generally coincided with (or perhaps stimulated) increases in the average rejection position. Similarly, decreases in the average acceptance position also coincided with decreases in the average rejection position.

Specifically, females low in esteem in the con-pro condition increased their attitudes toward the topic (as may be seen in the increase in the average acceptance position and rejection position in tables 5 and 7) to a greater degree than females high in esteem in the same con-pro condition. The direction of the change suggests a recency effect in that the females low in esteem were persuaded more by the last argument (in this instance the pro). This same finding suggests a similar primacy effect for females high in esteem in the con-pro order, as they were more persuaded by the first argument (con). The finding of a recency effect for females low in esteem in the con-pro order and a primacy effect for females high in esteem in the con-pro order was further strengthened by corresponding responses of females high and low in esteem in the alternate pro-con order. As before, females low in esteem responded
### Table 4

**Analysis of Variance: Average Acceptance Position Change Score by Order x Esteem x Sex**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>3.717</td>
<td>1</td>
<td>3.717</td>
<td>2.247</td>
<td>0.136</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.002</td>
<td>1</td>
<td>0.002</td>
<td>0.001</td>
<td>0.972</td>
</tr>
<tr>
<td>Sex</td>
<td>1.777</td>
<td>1</td>
<td>1.777</td>
<td>1.075</td>
<td>0.301</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Esteem</td>
<td>2.042</td>
<td>1</td>
<td>2.042</td>
<td>1.234</td>
<td>0.268</td>
</tr>
<tr>
<td>Order x Sex</td>
<td>0.553</td>
<td>1</td>
<td>0.553</td>
<td>0.340</td>
<td>0.561</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>0.276</td>
<td>1</td>
<td>0.276</td>
<td>0.157</td>
<td>0.683</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Esteem x Sex</td>
<td>15.584</td>
<td>1</td>
<td>15.584</td>
<td>9.423</td>
<td>0.003</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>23.841</td>
<td>7</td>
<td>3.406</td>
<td>2.059</td>
<td>0.051</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>254.585</td>
<td>154</td>
<td>1.654</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>278.526</td>
<td>161</td>
<td>1.730</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 5

**Comparison of Group Means:**

Average Acceptance Position Change Scores by Order x Esteem x Sex

<table>
<thead>
<tr>
<th>Pro-Con Order</th>
<th>Male</th>
<th>Female</th>
<th>Change Score</th>
<th>N size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Esteem</td>
<td>.13</td>
<td>-.23a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(19)</td>
<td>(14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Esteem</td>
<td>-.17c</td>
<td>.58a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(22)</td>
<td>(27)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Con-Pro Order</th>
<th>Male</th>
<th>Female</th>
<th>Change Score</th>
<th>N size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Esteem</td>
<td>.19</td>
<td>.93b</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(23)</td>
<td>(20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Esteem</td>
<td>.52d</td>
<td>-.05e</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(20)</td>
<td>(17)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Means with common subscripts are significantly different, p=.003.
TABLE 6

ANALYSIS OF VARIANCE:
AVERAGE REJECTION POSITION CHANGE SCORE BY
ORDER x ESTEEM x SEX

<table>
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<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>Order</td>
<td>4.264</td>
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<td>4.264</td>
<td>2.567</td>
<td>0.111</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.501</td>
<td>1</td>
<td>0.501</td>
<td>0.302</td>
<td>0.583</td>
</tr>
<tr>
<td>Sex</td>
<td>0.278</td>
<td>1</td>
<td>0.278</td>
<td>0.158</td>
<td>0.682</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Order x Esteem</td>
<td>4.022</td>
<td>1</td>
<td>4.022</td>
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<td>0.121</td>
</tr>
<tr>
<td>Order x Sex</td>
<td>0.502</td>
<td>1</td>
<td>0.502</td>
<td>0.303</td>
<td>0.583</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>0.148</td>
<td>1</td>
<td>0.148</td>
<td>0.039</td>
<td>0.765</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Esteem x Sex</td>
<td>12.700</td>
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<td>12.700</td>
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<td>0.006</td>
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<tr>
<td><strong>Explained</strong></td>
<td>22.163</td>
<td>7</td>
<td>3.166</td>
<td>1.913</td>
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<tr>
<td><strong>Residual</strong></td>
<td>254.941</td>
<td>154</td>
<td>1.655</td>
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<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>277.104</td>
<td>161</td>
<td>1.721</td>
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</tr>
</tbody>
</table>
### Table 7

**Comparison of Group Means:**

AVERAGE REJECTION POSITION CHANGE SCORES BY 
ORDER X ESTEEM X SEX

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Change Score</td>
<td>N size</td>
<td></td>
</tr>
<tr>
<td>Low Esteem</td>
<td>.15</td>
<td>-.30&lt;sub&gt;abd&lt;/sub&gt;</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td>HIGH Con-Ord</td>
<td>.09&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.57&lt;sup&gt;a&lt;/sup&gt;</td>
<td>(22)</td>
<td>(27)</td>
</tr>
<tr>
<td>Low Esteem</td>
<td>.38</td>
<td>.92&lt;sub&gt;bce&lt;/sub&gt;</td>
<td>(23)</td>
<td>(20)</td>
</tr>
<tr>
<td>HIGH Con-Ord</td>
<td>.75&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.04&lt;sup&gt;e&lt;/sup&gt;</td>
<td>(20)</td>
<td>(17)</td>
</tr>
</tbody>
</table>

Means with common subscripts are significantly different, p=.006.
in the direction of the argument presented last, while females high in esteem responded in favor of the argument presented first.

The results of these interaction effects offer some interesting insights. A clear advantage exists for the argument presented first among a group of females high in esteem, while the argument presented last has a similar effectiveness among a group of females low in esteem. Simply stated, females high in esteem respond to a primacy effect, while females low in esteem respond to a recency effect.

By contrast, only males high in esteem receiving a con-pro message showed any significant difference when compared with other cells. Since this pattern among males was not substantiated in any other message condition, it appears that this statistical significance holds little conceptual meaning for the question of the order by sex by esteem relationship.

Recall

In terms of amount of material recalled, two effects were noted. First, analysis revealed a main effect such that subjects low in dogmatism recalled more than subjects high in dogmatism, as may be seen in tables 8 and 9. While subjects low in dogmatism in general recalled more than subjects high in dogmatism, a sex by dogmatism interaction specifically revealed that males low in dogmatism recalled significantly more than males high in dogmatism (3.74 compared with 2.93, p=.03). These results are recorded in tables 8 and 10.
<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>10.199</td>
<td>1</td>
<td>10.199</td>
<td>6.723</td>
<td>0.010</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>6.205</td>
<td>1</td>
<td>6.205</td>
<td>4.093</td>
<td>0.045</td>
</tr>
<tr>
<td>Sex</td>
<td>0.344</td>
<td>1</td>
<td>0.344</td>
<td>0.227</td>
<td>0.534</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism</td>
<td>0.348</td>
<td>1</td>
<td>0.348</td>
<td>0.229</td>
<td>0.633</td>
</tr>
<tr>
<td>Relevance x Sex</td>
<td>0.071</td>
<td>1</td>
<td>0.071</td>
<td>0.047</td>
<td>0.829</td>
</tr>
<tr>
<td>Dogmatism x Sex</td>
<td>7.250</td>
<td>1</td>
<td>7.250</td>
<td>4.779</td>
<td>0.030</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism x Sex</td>
<td>2.004</td>
<td>1</td>
<td>2.004</td>
<td>1.321</td>
<td>0.252</td>
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<tr>
<td><strong>Explained</strong></td>
<td>27.312</td>
<td>7</td>
<td>3.902</td>
<td>2.572</td>
<td>0.016</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>233.624</td>
<td>154</td>
<td>1.517</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>250.937</td>
<td>161</td>
<td>1.621</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Acceptance Position Change Scores</td>
<td>Relevant</td>
<td>Irrelevant</td>
<td>Pro-Con</td>
<td>Con-Pro</td>
<td>Male</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>---------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Frequency of Rejection Position Change Scores</td>
<td>.04</td>
<td>1.77</td>
<td>2.34</td>
<td>-1.71</td>
<td>.02</td>
</tr>
<tr>
<td>Frequency of Noncommitment Position Change Scores</td>
<td>-.33</td>
<td>-3.19</td>
<td>.93</td>
<td>-2.16</td>
<td>.05</td>
</tr>
<tr>
<td>Average Acceptance Position Change Scores</td>
<td>-.05</td>
<td>.61</td>
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</tr>
<tr>
<td>Average Rejection Position Change Scores</td>
<td>.04</td>
<td>.72</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Recall</td>
<td>3.02</td>
<td>3.54</td>
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<td></td>
</tr>
</tbody>
</table>

*All these reported main effect means are significant: a = p < .05, b = p < .01, c = p < .001.
**TABLE 10**

COMPARISON OF GROUP MEANS:
AMOUNT OF MATERIAL RECALLED BY
DOGMATISM x SEX

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Dogmatism</td>
<td>3.74a</td>
<td>3.21</td>
</tr>
<tr>
<td></td>
<td>(42)</td>
<td>(47)</td>
</tr>
<tr>
<td>High Dogmatism</td>
<td>2.93a</td>
<td>3.26</td>
</tr>
<tr>
<td></td>
<td>(42)</td>
<td>(31)</td>
</tr>
</tbody>
</table>

Recall Scores
N size

Means with common subscripts are significantly different, \( p=.03 \).
Research Question 2

How may topic relevance affect attitude change and recall in the general order effects paradigm?

Attitude Change

Perhaps the most pervasive effect discovered in this study concerned message relevance. In terms of the frequency of acceptance, rejection, and noncommitment positions, the main effect of message relevance surfaced in every three-way analysis of variance that incorporated message relevance as a variable. As tables 9, 11, 12, and 13 illustrate, the irrelevant topic produced a higher frequency of acceptance and rejection positions on the posttest than the pretest than the relevant topic. It also produced a lower frequency of noncommitment positions on the posttest than the pretest than the relevant topic. This result would suggest a broadening of the latitudes of acceptance and rejection, and a subsequent narrowing of the latitude of noncommitment. Tables 9, 14, and 15 reveal that the subjects also increased the scale values for their average acceptance and rejection positions more in the irrelevant condition than in the relevant condition. This indicates that the subjects were refining their attitudes by accepting more on the good, wise, and valuable end of the continuum and rejecting more on the bad, foolish, and worthless end.

Tables 16 and 17 indicate that an interaction of relevance and order was operative such that subjects who received the irrelevant topic in con-pro order tended to increase the frequency of rejection responses more than subjects in all other conditions. Moreover,
TABLE 11

ANALYSIS OF VARIANCE:
FREQUENCY OF ACCEPTANCE POSITION CHANGE SCORE BY
RELEVANCE x ESTEEM x SEX

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
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</tr>
<tr>
<td>Relevance</td>
<td>59.131</td>
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<td>59.131</td>
<td>5.780</td>
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<tr>
<td>Esteem</td>
<td>0.541</td>
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<td>0.541</td>
<td>0.053</td>
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<tr>
<td>Sex</td>
<td>14.699</td>
<td>1</td>
<td>14.699</td>
<td>1.437</td>
<td>0.232</td>
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<tr>
<td><strong>2-Way Interactions</strong></td>
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<td></td>
</tr>
<tr>
<td>Relevance x Esteem</td>
<td>0.083</td>
<td>1</td>
<td>0.083</td>
<td>0.008</td>
<td>0.928</td>
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<tr>
<td>Relevance x Sex</td>
<td>1.871</td>
<td>1</td>
<td>1.871</td>
<td>0.183</td>
<td>0.670</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>0.422</td>
<td>1</td>
<td>0.422</td>
<td>0.041</td>
<td>0.839</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Esteem x Sex</td>
<td>9.228</td>
<td>1</td>
<td>9.228</td>
<td>0.902</td>
<td>0.344</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>80.432</td>
<td>7</td>
<td>11.490</td>
<td>1.123</td>
<td>0.351</td>
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<tr>
<td><strong>Residual</strong></td>
<td>1575.361</td>
<td>154</td>
<td>10.230</td>
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<tr>
<td><strong>Total</strong></td>
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<td>161</td>
<td>10.284</td>
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<td>Mean Square</td>
<td>F</td>
<td>Significance of F</td>
</tr>
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<td>----------------</td>
<td>----</td>
<td>-------------</td>
<td>-----</td>
<td>------------------</td>
</tr>
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<td><strong>Main Effects</strong></td>
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<td></td>
</tr>
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<td>Relevance</td>
<td>134.020</td>
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<td>134.020</td>
<td>10.076</td>
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<tr>
<td>Esteem</td>
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<td>2.801</td>
<td>0.211</td>
<td>0.647</td>
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<tr>
<td>Sex</td>
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<td>27.166</td>
<td>2.042</td>
<td>0.155</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance × Esteem</td>
<td>3.159</td>
<td>1</td>
<td>3.159</td>
<td>0.237</td>
<td>0.627</td>
</tr>
<tr>
<td>Relevance × Sex</td>
<td>37.712</td>
<td>1</td>
<td>37.712</td>
<td>2.835</td>
<td>0.094</td>
</tr>
<tr>
<td>Esteem × Sex</td>
<td>0.039</td>
<td>1</td>
<td>0.039</td>
<td>0.003</td>
<td>0.957</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance × Esteem × Sex</td>
<td>3.783</td>
<td>1</td>
<td>3.783</td>
<td>0.284</td>
<td>0.595</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>198.100</td>
<td>7</td>
<td>28.300</td>
<td>2.128</td>
<td>0.044</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>2048.303</td>
<td>154</td>
<td>13.301</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>2245.403</td>
<td>161</td>
<td>13.953</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 13

ANALYSIS OF VARIANCE:
FREQUENCY OF NONCOMMITMENT POSITION CHANGE SCORES BY
RELEVANCE x ESTEEM x SEX

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>362.810</td>
<td>1</td>
<td>362.810</td>
<td>11.510</td>
<td>0.001</td>
</tr>
<tr>
<td>Esteem</td>
<td>2.993</td>
<td>1</td>
<td>2.993</td>
<td>0.096</td>
<td>0.757</td>
</tr>
<tr>
<td>Sex</td>
<td>82.542</td>
<td>1</td>
<td>82.542</td>
<td>2.646</td>
<td>0.106</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Esteem</td>
<td>2.480</td>
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<tr>
<td>Relevance x Sex</td>
<td>61.950</td>
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<td>0.161</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>1.667</td>
<td>1</td>
<td>1.667</td>
<td>0.053</td>
<td>0.817</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Esteem x Sex</td>
<td>0.325</td>
<td>1</td>
<td>0.325</td>
<td>0.010</td>
<td>0.919</td>
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<td><strong>Explained</strong></td>
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<td>69.021</td>
<td>2.212</td>
<td>0.036</td>
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<td>31.197</td>
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<td><strong>Total</strong></td>
<td>5287.523</td>
<td>161</td>
<td>32.842</td>
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</tr>
</tbody>
</table>
TABLE 14

ANALYSIS OF VARIANCE:
AVERAGE ACCEPTANCE POSITION CHANGE SCORES BY
RELEVANCE x ESTEEM x DOGMATISM

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
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<td><strong>Main Effects</strong></td>
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<tr>
<td>Relevance</td>
<td>17.311</td>
<td>1</td>
<td>17.311</td>
<td>10.479</td>
<td>0.001</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>1.952</td>
<td>1</td>
<td>1.952</td>
<td>1.183</td>
<td>0.272</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.022</td>
<td>1</td>
<td>0.022</td>
<td>0.014</td>
<td>0.907</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism</td>
<td>0.455</td>
<td>1</td>
<td>0.455</td>
<td>0.257</td>
<td>0.600</td>
</tr>
<tr>
<td>Relevance x Esteem</td>
<td>0.063</td>
<td>1</td>
<td>0.063</td>
<td>0.038</td>
<td>0.846</td>
</tr>
<tr>
<td>Esteem x Dogmatism</td>
<td>1.957</td>
<td>1</td>
<td>1.957</td>
<td>1.187</td>
<td>0.272</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism x Esteem</td>
<td>2.741</td>
<td>1</td>
<td>2.741</td>
<td>1.662</td>
<td>0.199</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>24.564</td>
<td>7</td>
<td>3.509</td>
<td>2.123</td>
<td>0.044</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>253.952</td>
<td>154</td>
<td>1.649</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>278.526</td>
<td>161</td>
<td>1.730</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 15

**ANALYSIS OF VARIANCE:**

**AVERAGE REJECTION POSITION CHANGE SCORES BY RELEVANCE x DOGMATISM x ESTEEM**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>18.837</td>
<td>1</td>
<td>18.837</td>
<td>11.734</td>
<td>0.001</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>2.009</td>
<td>1</td>
<td>2.009</td>
<td>1.252</td>
<td>0.265</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.557</td>
<td>1</td>
<td>0.557</td>
<td>0.359</td>
<td>0.550</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism</td>
<td>0.979</td>
<td>1</td>
<td>0.979</td>
<td>0.610</td>
<td>0.436</td>
</tr>
<tr>
<td>Relevance x Esteem</td>
<td>0.166</td>
<td>1</td>
<td>0.166</td>
<td>0.103</td>
<td>0.749</td>
</tr>
<tr>
<td>Dogmatism x Esteem</td>
<td>4.713</td>
<td>1</td>
<td>4.713</td>
<td>2.936</td>
<td>0.069</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance x Dogmatism x Esteem</td>
<td>2.875</td>
<td>1</td>
<td>2.875</td>
<td>1.791</td>
<td>0.183</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>29.893</td>
<td>7</td>
<td>4.270</td>
<td>2.650</td>
<td>0.013</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>247.211</td>
<td>154</td>
<td>1.605</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>277.104</td>
<td>161</td>
<td>1.721</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 16**

**ANALYSIS OF VARIANCE:**

**FREQUENCY OF REJECTION POSITION CHANGE SCORES BY ORDER x RELEVANCE x ESTEEM**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>34.147</td>
<td>1</td>
<td>34.147</td>
<td>2.630</td>
<td>0.107</td>
</tr>
<tr>
<td>Relevance</td>
<td>122.589</td>
<td>1</td>
<td>122.589</td>
<td>9.441</td>
<td>0.003</td>
</tr>
<tr>
<td>Esteem</td>
<td>7.430</td>
<td>1</td>
<td>7.430</td>
<td>0.572</td>
<td>0.451</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Relevance</td>
<td>48.657</td>
<td>1</td>
<td>48.657</td>
<td>3.747</td>
<td>0.055</td>
</tr>
<tr>
<td>Order x Esteem</td>
<td>19.378</td>
<td>1</td>
<td>19.378</td>
<td>1.492</td>
<td>0.224</td>
</tr>
<tr>
<td>Relevance x Esteem</td>
<td>9.954</td>
<td>1</td>
<td>9.954</td>
<td>0.757</td>
<td>0.383</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Relevance x Esteem</td>
<td>8.501</td>
<td>1</td>
<td>8.501</td>
<td>0.555</td>
<td>0.420</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>246.767</td>
<td>7</td>
<td>35.252</td>
<td>2.715</td>
<td>0.011</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>1999.535</td>
<td>154</td>
<td>12.985</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2246.403</td>
<td>161</td>
<td>13.953</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 17

COMPARISON OF GROUP MEANS:
FREQUENCY OF REJECTION POSITIONS CHANGE SCORES BY
ORDER x RELEVANCE

<table>
<thead>
<tr>
<th></th>
<th>Pro-Con Order</th>
<th>Con-Pro Order</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relevant Topic</td>
<td>.14&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.77&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Change Score</td>
</tr>
<tr>
<td></td>
<td>(42)</td>
<td>(40)</td>
<td>N size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irrelevant Topic</td>
<td>-.08&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.73&lt;sup&gt;abc&lt;/sup&gt;</td>
<td>Change Score</td>
</tr>
<tr>
<td></td>
<td>(39)</td>
<td>(41)</td>
<td>N size</td>
<td></td>
</tr>
</tbody>
</table>

Means with common subscripts are significantly different, p = .054.
tables 18 and 19 reveal that these same subjects also increased their average acceptance position to a greater degree than subjects in all other conditions.

In sum, the results indicate (1) the irrelevant topic induced more agreement than the relevant topic, (2) especially among subjects in the con-pro irrelevant condition.

Recall

As in attitude change, message relevance surfaced in every three-way analysis of variance that incorporated it as a variable. As tables 8 and 9 depict, subjects recalled more material in the irrelevant condition than in the relevant condition (3.54 compared with 3.02, p < .01).

Research Question 2

How may order of presentation affect attitude change and recall in the general order effects paradigm?

Attitude Change

In terms of changes in the frequency of noncommitment positions, a difference was evident between the two presentational orders. The con-pro order was more successful than the alternative pro-con order in eliciting significantly fewer noncommitment positions on the posttest than the pretest (see tables 9 and 20). Moreover, when order was coupled with relevance, the con-pro irrelevant condition produced more rejection positions than did all other conditions on the posttest than the pretest (see tables 16 and 17).
<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>3.416</td>
<td>1</td>
<td>3.416</td>
<td>2.130</td>
<td>0.168</td>
</tr>
<tr>
<td>Relevance</td>
<td>18.413</td>
<td>1</td>
<td>18.413</td>
<td>11.483</td>
<td>0.001</td>
</tr>
<tr>
<td>Sex</td>
<td>3.071</td>
<td>1</td>
<td>3.071</td>
<td>1.915</td>
<td>0.168</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Relevance</td>
<td>6.024</td>
<td>1</td>
<td>6.024</td>
<td>3.756</td>
<td>0.001</td>
</tr>
<tr>
<td>Order x Sex</td>
<td>0.949</td>
<td>1</td>
<td>0.949</td>
<td>0.592</td>
<td>0.443</td>
</tr>
<tr>
<td>Relevance x Sex</td>
<td>0.385</td>
<td>1</td>
<td>0.385</td>
<td>0.240</td>
<td>0.625</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Relevance x Sex</td>
<td>0.050</td>
<td>1</td>
<td>0.050</td>
<td>0.031</td>
<td>0.860</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>31.586</td>
<td>7</td>
<td>4.512</td>
<td>2.814</td>
<td>0.009</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>246.940</td>
<td>154</td>
<td>1.604</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>278.526</td>
<td>161</td>
<td>1.730</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 19
COMPARISON OF GROUP MEANS:
AVERAGE ACCEPTANCE POSITION CHANGE SCORES BY
ORDER x RELEVANCE

<table>
<thead>
<tr>
<th>Pro-Con Order</th>
<th>Con-Pro Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant Topic</td>
<td>-.02&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>(42)</td>
<td>(40)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrelevant Topic</td>
<td>-.12&lt;sub&gt;c&lt;/sub&gt;</td>
</tr>
<tr>
<td>(39)</td>
<td>(41)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Means with common subscripts are significantly different, p=.054.
### Table 20

**Analysis of Variance:**

Frequency of Noncommitment Position Change Scores by Order x Esteem x Sex

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>123.28</td>
<td>1</td>
<td>123.28</td>
<td>3.797</td>
<td>0.053</td>
</tr>
<tr>
<td>Esteem</td>
<td>2.055</td>
<td>1</td>
<td>2.055</td>
<td>0.053</td>
<td>0.802</td>
</tr>
<tr>
<td>Sex</td>
<td>58.735</td>
<td>1</td>
<td>58.735</td>
<td>1.309</td>
<td>0.181</td>
</tr>
<tr>
<td><strong>2-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Esteem</td>
<td>50.780</td>
<td>1</td>
<td>50.780</td>
<td>1.554</td>
<td>0.213</td>
</tr>
<tr>
<td>Order x Sex</td>
<td>12.895</td>
<td>1</td>
<td>12.895</td>
<td>0.397</td>
<td>0.529</td>
</tr>
<tr>
<td>Esteem x Sex</td>
<td>0.200</td>
<td>1</td>
<td>0.200</td>
<td>0.006</td>
<td>0.937</td>
</tr>
<tr>
<td><strong>3-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order x Esteem x Sex</td>
<td>43.547</td>
<td>1</td>
<td>43.547</td>
<td>1.311</td>
<td>0.249</td>
</tr>
<tr>
<td><strong>Explained</strong></td>
<td>287.797</td>
<td>7</td>
<td>41.114</td>
<td>1.256</td>
<td>0.271</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>4,999,727</td>
<td>154</td>
<td>32.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,287,523</td>
<td>161</td>
<td>32.842</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In terms of the average acceptance, rejection, and non-commitment positions, order was found to interact with relevance (as previously explained in research question 2) such that subjects who received the irrelevant topic in the con-pro order responded more positively than did subjects in all other conditions. Also, an interaction of order by esteem by sex produced a recency effect for females low in esteem, and a primacy effect for females high in esteem (see tables 4 through 7).

Recall

No significant differences occurred for order as it affects recall.

Research Question 4

Is recall an adequate predictor of the persuasiveness of a particular communication? Classical attitude theorists have for years argued for what Crano termed the simple isomorphism of retention and attitude. The principle is that with two persuasive messages, the one more remembered will be the more persuasive. Were this true one would expect attitude change scores to correlate positively with recall scores. The data do not confirm this expectation, as may be seen in table 21. None of the correlation coefficients reached the critical level necessary for significance. This suggests that it is possible for a persuasive message to have its desired persuasive impact while not stimulating a great degree of retention.
TABLE 21
PEARSON r CORRELATION COEFFICIENTS:
ATTITUDE MEASURE AND RECALL MEASURE
SCORE CORRELATIONS

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Pearson r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most Acceptable Position Change Score</td>
<td>-0.0055</td>
</tr>
<tr>
<td></td>
<td>(p=0.472)</td>
</tr>
<tr>
<td>Frequency of Acceptance Position Change Score</td>
<td>0.1266</td>
</tr>
<tr>
<td></td>
<td>(p=0.054)</td>
</tr>
<tr>
<td>Frequency of Rejection Position Change Score</td>
<td>0.0112</td>
</tr>
<tr>
<td></td>
<td>(p=0.444)</td>
</tr>
<tr>
<td>Frequency of Noncommitment Position Change Score</td>
<td>-0.0801</td>
</tr>
<tr>
<td></td>
<td>(p=0.155)</td>
</tr>
<tr>
<td>Average Acceptance Position Change Score</td>
<td>0.0873</td>
</tr>
<tr>
<td></td>
<td>(p=0.135)</td>
</tr>
<tr>
<td>Average Rejection Position Change Score</td>
<td>0.1351</td>
</tr>
<tr>
<td></td>
<td>(p=0.043)</td>
</tr>
<tr>
<td>Average Noncommitment Position Change Score</td>
<td>0.0329</td>
</tr>
<tr>
<td></td>
<td>(p=0.339)</td>
</tr>
</tbody>
</table>
Research Question 5

Of the independent variables given, what combination predict attitude change and recall? "Multiple regression is a general statistical technique through which one can analyze the relationship between a dependent or criterion variable and a set of independent or predictor variables."¹ In this analysis the technique was used as an inferential tool by which predictions of relationships in the population may be made from sample data. The general form of the regression is \( Y' = A + B_1X_1 + B_2X_2 + B_3X_3 + \ldots + B_kX_k \), where \( Y' \) is the estimated value for \( Y \), \( A \) is the \( Y \) intercept, and \( B_i \) are the regression coefficients.

Specifically, the research question concerned the strength of dependence or amount of variation in attitude change and recall that can be expected by linear dependence upon the five predictor variables operating jointly. It was presumed that attitude change and recall were linearly related to the predictor variables in such a manner as to allow prediction on the basis of knowledge of the presence or absence of the predictor variables.

The results of this analysis are reported in tables 22 through 29. The data indicate a relatively small predictive capacity on the basis of the five predictor variables. The tables present the Multiple \( R \) and \( R^2 \) for the individual variables and variables in combination. In terms of frequency of response, the variables in combination account for 5.5% of the variation in frequency of acceptance positions, 8.8% of the variation in frequency of rejection positions, and 10.3% of the variation in frequency of noncommitment positions.

¹ Nie, Statistical Package, p. 321.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esteem</td>
<td>0.088</td>
<td>0.007</td>
<td>0.007</td>
<td>-0.088</td>
<td>-0.449</td>
<td>-0.107</td>
</tr>
<tr>
<td>Relevance</td>
<td>0.130</td>
<td>0.169</td>
<td>0.009</td>
<td>-0.086</td>
<td>-0.396</td>
<td>-0.094</td>
</tr>
<tr>
<td>Order</td>
<td>0.155</td>
<td>0.244</td>
<td>0.007</td>
<td>-0.074</td>
<td>-0.356</td>
<td>-0.086</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.157</td>
<td>0.024</td>
<td>0.000</td>
<td>0.033</td>
<td>0.755</td>
<td>0.018</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.659</td>
<td></td>
</tr>
</tbody>
</table>

\[ a = p < .05, \quad b = p < .01, \quad c = p < .001 \]
<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>b</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.180</td>
<td>0.322</td>
<td>0.322</td>
<td>-0.180</td>
<td>-1.213</td>
<td>-0.196</td>
</tr>
<tr>
<td>Order</td>
<td>0.210</td>
<td>0.044</td>
<td>0.012</td>
<td>-0.113</td>
<td>-0.747</td>
<td>-0.117</td>
</tr>
<tr>
<td>Sex</td>
<td>0.232</td>
<td>0.054</td>
<td>0.010</td>
<td>-0.077</td>
<td>-0.628</td>
<td>-0.098</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.235</td>
<td>0.055</td>
<td>0.001</td>
<td>-0.005</td>
<td>-0.216</td>
<td>-0.034</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.374</td>
<td></td>
</tr>
</tbody>
</table>

\[ a = p < .05, \quad b = p < .01, \quad c = p < .001 \]
<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.250(^a)</td>
<td>0.062</td>
<td>0.062</td>
<td>0.250(^a)</td>
<td>2.991</td>
<td>0.262</td>
</tr>
<tr>
<td>Order</td>
<td>0.287(^b)</td>
<td>0.082</td>
<td>0.020</td>
<td>0.148</td>
<td>1.704</td>
<td>0.149</td>
</tr>
<tr>
<td>Sex</td>
<td>0.316(^b)</td>
<td>0.100</td>
<td>0.017</td>
<td>0.101</td>
<td>1.439</td>
<td>0.126</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.319(^b)</td>
<td>0.102</td>
<td>0.002</td>
<td>-0.058</td>
<td>-0.468</td>
<td>-0.041</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.321(^c)</td>
<td>0.103</td>
<td>0.002</td>
<td>0.006</td>
<td>0.459</td>
<td>0.040</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-7.429</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) p < .05, \(^b\) p < .01, \(^c\) p < .001
**TABLE 25**

**STEPWISE MULTIPLE REGRESSION**

CRITERION VARIABLE: CHANGE IN FREQUENCY OF REJECTION POSITIONS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.232</td>
<td>0.054</td>
<td>0.054</td>
<td>-0.232</td>
<td>-1.613</td>
<td>-0.243</td>
</tr>
<tr>
<td>Order</td>
<td>0.260</td>
<td>0.067</td>
<td>0.014</td>
<td>-0.122</td>
<td>-0.919</td>
<td>-0.123</td>
</tr>
<tr>
<td>Sex</td>
<td>0.285</td>
<td>0.081</td>
<td>0.014</td>
<td>-0.009</td>
<td>-0.802</td>
<td>-0.108</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.293</td>
<td>0.088</td>
<td>0.005</td>
<td>0.090</td>
<td>0.483</td>
<td>0.055</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.295</td>
<td>0.088</td>
<td>0.002</td>
<td>-0.018</td>
<td>-0.344</td>
<td>-0.046</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.205</td>
<td></td>
</tr>
</tbody>
</table>

a = p < .05, b = p < .01, c = p < .001
**Table 26**

**Stepwise Multiple Regression**

**Criterion Variable:** Change in Average Acceptance Position

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.251(^a)</td>
<td>0.063</td>
<td>0.063</td>
<td>-0.251(^a)</td>
<td>-0.679</td>
<td>-0.259</td>
</tr>
<tr>
<td>Order</td>
<td>0.273(^b)</td>
<td>0.074</td>
<td>0.011</td>
<td>-0.113</td>
<td>-0.288</td>
<td>-0.110</td>
</tr>
<tr>
<td>Sex</td>
<td>0.292(^b)</td>
<td>0.085</td>
<td>0.011</td>
<td>-0.075</td>
<td>-0.255</td>
<td>-0.097</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.300(^b)</td>
<td>0.090</td>
<td>0.004</td>
<td>0.088</td>
<td>0.177</td>
<td>0.067</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.301(^b)</td>
<td>0.090</td>
<td>0.000</td>
<td>0.008</td>
<td>-0.526</td>
<td>-0.020</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.367</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) = p < .05, \(^b\) = p < .01, \(^c\) = p < .001
<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.259 (^b)</td>
<td>0.067</td>
<td>0.067</td>
<td>-0.259 (^b)</td>
<td>-0.695</td>
<td>-0.256</td>
</tr>
<tr>
<td>Order</td>
<td>0.282 (^b)</td>
<td>0.079</td>
<td>0.013</td>
<td>-0.118</td>
<td>-0.309</td>
<td>-0.118</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.294 (^b)</td>
<td>0.087</td>
<td>0.007</td>
<td>0.093</td>
<td>0.192</td>
<td>0.073</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.300 (^b)</td>
<td>0.090</td>
<td>0.004</td>
<td>-0.028</td>
<td>-0.158</td>
<td>-0.060</td>
</tr>
<tr>
<td>Sex</td>
<td>0.304 (^b)</td>
<td>0.092</td>
<td>0.002</td>
<td>-0.030</td>
<td>-0.129</td>
<td>-0.049</td>
</tr>
<tr>
<td>(Constant)</td>
<td>(^{\text{a}})</td>
<td></td>
<td></td>
<td></td>
<td>1.277</td>
<td></td>
</tr>
</tbody>
</table>

\(a = p < .05\), \(b = p < .01\), \(c = p < .001\)
### Table 28

**Stepwise Multiple Regression**

**Criterion Variable:** Change in Average Noncommitment Position

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.068</td>
<td>0.005</td>
<td>0.005</td>
<td>0.068</td>
<td>0.190</td>
<td>0.070</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.085</td>
<td>0.007</td>
<td>0.003</td>
<td>-0.047</td>
<td>-0.158</td>
<td>-0.158</td>
</tr>
<tr>
<td>Order</td>
<td>0.097</td>
<td>0.009</td>
<td>0.002</td>
<td>-0.040</td>
<td>-0.133</td>
<td>-0.049</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.106</td>
<td>0.011</td>
<td>0.002</td>
<td>-0.043</td>
<td>-0.117</td>
<td>-0.043</td>
</tr>
<tr>
<td>Relevance</td>
<td>0.113</td>
<td>0.013</td>
<td>0.002</td>
<td>0.038</td>
<td>0.109</td>
<td>0.040</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.101</td>
<td></td>
</tr>
</tbody>
</table>

a = p < .05, b = p < .01, c = p < .001
TABLE 29

STEPWISE MULTIPLE REGRESSION
CRITERION VARIABLE: RECALL

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple R</th>
<th>R Square</th>
<th>RSQ Change</th>
<th>Simple R</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>0.204</td>
<td>0.042</td>
<td>0.042</td>
<td>0.204</td>
<td>0.538</td>
<td>0.212</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>0.254</td>
<td>0.055</td>
<td>0.023</td>
<td>-0.154</td>
<td>-0.374</td>
<td>-0.146</td>
</tr>
<tr>
<td>Esteem</td>
<td>0.285</td>
<td>0.081</td>
<td>0.017</td>
<td>0.123</td>
<td>0.319</td>
<td>0.126</td>
</tr>
<tr>
<td>Order</td>
<td>0.290</td>
<td>0.084</td>
<td>0.003</td>
<td>-0.056</td>
<td>-0.134</td>
<td>-0.053</td>
</tr>
<tr>
<td>Sex</td>
<td>0.293</td>
<td>0.086</td>
<td>0.001</td>
<td>-0.040</td>
<td>-0.113</td>
<td>-0.045</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.900</td>
<td></td>
</tr>
</tbody>
</table>

\( a = p < .05, \ b = p < .01, \ c = p < .001 \)
In terms of the average acceptance, rejection, and noncommitment positions, the variables in combination account for 9.0% of the variation in the average acceptance position, 9.3% of the variation in the average rejection position, and 1.2% of the variation in the average noncommitment position. When attitude change was predicted on the basis of the most acceptable position on the pre- and posttests the variables in combination account for only 2.5% of the variation. Finally, the recall data suggest that the five variables account for 8.6% of the variation in recall scores.

Summary

The purpose of this chapter is to report the results found in the study. The analysis revealed several interesting findings:

(1) Certain personality and demographic characteristics affect persuasion in the general order effects paradigm. It was found that males high in esteem and dogmatism were not as easily persuaded as females high in esteem and dogmatism. Secondly, females low in esteem responded with a strong recency effect, while females high in esteem responded with a strong primacy effect. Finally, subjects low in dogmatism recalled significantly more than subjects high in dogmatism, and males low in dogmatism recalled significantly more than males high in dogmatism.

(2) Message relevance apparently affects persuasion in the general order effects paradigm. Subjects who received the irrelevant topic accepted significantly more than the subjects who received the relevant topic. Also, subjects who received the irrelevant topic in con-pro order were more persuaded toward the topic than subjects
in all other conditions. Finally, the subjects in the irrelevant condition recalled significantly more than subjects in the relevant condition.

(3) The order of presentation was found to be important. Subjects who received the speeches in con-pro order responded with fewer noncommitment positions than subjects who received the speeches in the pro-con order on the posttest than the pretest.

(4) Contrary to expectations, the recall scores did not correlate highly with the attitude change scores.

(5) The five predictor variables provided only a small explanation of the variance in attitude change scores and recall scores.

The following chapter is devoted to a discussion of the results.
CHAPTER IV

DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

Whereas the previous chapter dealt with a description of the results, this chapter focuses on implications and conclusions of the results. The discussion focuses on the research questions from the previous chapters.

Research Question 1

The first research question sought to determine the relation of certain personality and demographic characteristics to order effects. The first finding concerns a significant sex difference among subjects high in esteem and dogmatism. Females increased their latitudes of acceptance, while males actually decreased their latitudes of acceptance from the pretest to the posttest (see table 3). This effect signifies that among subjects high in esteem and dogmatism, the degree of attitude change created will be greater for females than for males, when opposing arguments advocate the same amount of change. This would seem to imply (in terms of the magnitude of impact hypothesis) that a speaker should place much more emphasis on attempting to persuade male subjects who have a high degree of esteem and dogmatism than females who have a high degree of esteem and dogmatism.

The finding of primacy and recency for females high and low in esteem on the basis of order of presentation must be interpreted
in light of the three applicable theoretical hypotheses. The set explanation maintains that when using messages that are contiguous with immediate testing after the last communication, the subjects should respond with a primacy effect. Lana, Rosnow, and Thomas, Webb, and Tweedie found these results using highly familiar, interesting, and controversial topics. The results of this study shed further light on this interpretation in that the results previously obtained may have been due to differences in the degree of esteem among females in the studies. As esteem increases, the likelihood of primacy increases; conversely, as esteem decreases, the likelihood of recency increases.

Schultz, in his sensory variation hypothesis would have likewise predicted a primacy effect under postulate 4a. This postulate maintains that when current issues are used as topics, and the issues used are highly relevant to the subjects (i.e., interesting, familiar, and controversial), the strength of primacy should increase. Since this is basically the same prediction that the set explanation offers, the previous discussion applies here as well. Schultz’s hypothesis may also be modified to account for differences in degree of esteem among female subjects. Had the previous experiments contained a large number of high esteem females, the results obtained would have been expected. If the samples had contained a higher number of females low in esteem, a recency effect might have been the result.

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1 For a more complete discussion of the issue, see pages 4 through 9.
Finally, the Miller and Campbell explanation would have predicted a recency effect as the messages were contiguous with immediate testing after the last message. A general recency effect was not found, however. Specifically, though, recency was the result among females low in esteem, while primacy was the result among females high in esteem. No significant effects occurred among males high or low in esteem.

These results do not disprove any of the existing theories. Rather, they indicate that primacy and recency effects may be better predicted by including subject self-esteem with novelty of message, order of presentation, message relevance, and time of measures and messages. The results marginally support all of the theories through a finding of a recency effect among females low in esteem, and a primacy effect among females high in esteem.

In attempting to understand why females high in esteem were more persuaded by the first argument, while females low in esteem were more persuaded by the latter, it may help to analyze the results in terms of the assumptions underlying the three models previously noted. Perhaps, then, it is obvious that if the set theory is appropriate in its application to studies using current social issues as topics, females high in esteem were more amenable to the Einstellung or set response and as a result, responded more in terms of initial material than subsequent material on the posttest. It may be that high esteem females consistently paid more attention to the first message, while low esteem females paid more attention to the second message. On the other hand, it may be that females with high esteem have learned over time that if solution A works well in situation
A, it may work just as well in situation B. Thus, if their attitudes are formed toward the concept (solution A) after hearing only the initial material (situation A), the early attitude formed (solution A) may be adopted in the face of competing stimulation from the second message (situation B). Females low in esteem may have failed over time to respond in this set producing manner. Finally, it may be that females low in esteem simply have more tolerance for ambiguity than females high in esteem, though this speculation has little empirical support.

Schultz's hypothesis 4a is geared more toward explaining primacy as a function of message salience. Still, however, on the basis of the current research, one may assume that the effects achieved were due to other factors such as receivers' sex and self-esteem, rather than due solely to the intensity of message stimulus and cortical activation. It may well be, for instance, that there is an intensity of stimulus placement such that high esteem females regard the initial position as more intense than the second, while females low in esteem accept the second position as more influential. This explanation may best be illustrated in the following two examples: In journalism a commonly accepted practice exists whereby newspaper reporters present the most significant parts of a news story first and the most trivial items last, in the form of an inverted pyramid. Moreover, it is common practice for newspaper editors and compilers to arrange the whole paper such that the most important events are presented first, with happenings of lesser significance tucked away inside underneath some advertisement. This obsession
with "categorizing" items may carry over into our personal perception of the importance of expressed ideas. Thus, females high in esteem may tend to regard the first position as more intense, while females low in esteem may regard the last as more intense, according to different categorization principles. Certainly the matter deserves more attention.

Finally, the Miller and Campbell model assumes that primacy or recency occurs due to the timing of measures and messages. Recency effects are expected in instances where the speeches are contiguous and testing immediately after the last message—the condition established in the present study. They assume that if one's attitude is tested immediately after a communication, the communication will have an effect in its intended direction. However, the advantage for that effect will dissipate rapidly over time, such that later the speech will have had negligible effects, and attitudes will have perhaps reverted to those prior to the communication. Perhaps this temporary advantage of the moment is stronger for females high in esteem. Their attitudes formed after the first communication dissipate less rapidly than the attitudes formed by the low esteem females. This might account for the results obtained in this study.

In terms of recall it was found that subjects low in dogmatism recalled more than subjects high in dogmatism, and particularly that males low in dogmatism recalled more than males high in dogmatism. This is not surprising in light of expected results. One would expect a relatively open-minded person to pay more attention to two contradictory communications, while persons
who are high in dogmatism would be expected to evaluate the situation, form an early impression, and disregard later contradictory information. As a result, subjects high in dogmatism would be expected to select or retain only those items from the second message which supported the early opinion. While the formulated opinions among the subjects low in dogmatism might have a greater degree of disparity and a lessened chance for primacy or recency trends, the similarity of subjects high in dogmatism on the basis of their selective attention and retention would be profound. The sex difference found may be further explained in that males low in dogmatism would tend to pay even more attention to all the information presented than the males high in dogmatism, who would be expected to be even more selective in their attention. This study was not designed to test the relative effectiveness of the first argument as compared with the effectiveness of the latter in terms of material recalled from each by subjects low and high in dogmatism. Rather, it could assess only differences that might have existed between groups in terms of the total amount of material recalled from the total message. It would be advantageous for future research to take this into account as it may be that one of the two positions has the advantage (especially in relation to dogmatism) in terms of amount of material recalled.

Research Question 2

The second research question concerned differences that may have existed due to the degree of interest, familiarity, and controversy of the topic. On the basis of previous research, it was
expected that as message relevance increased, so would attention, accuracy of perception, and comprehension. The results from the study do not support this conclusion; rather, they suggest the opposite. In numerous instances the irrelevant topic created more attitude change and recall than the relevant topic.

This result must be interpreted in light of two experimental artifacts. First, as subjects were completing the pretest questionnaire, a few students looked up in a perplexed manner and asked, "What are sunshine laws?" It may have been possible that the two speech topics were so immensely different in terms of familiarity such that subjects who received the unfamiliar topic (sunshine laws) had formulated little or no attitude toward them, while subjects doubtlessly had an opinion toward co-ed dorms. Thus, subjects in the irrelevant condition were actually learning more, and subsequently recalling more, than subjects in the relevant condition. Secondly, in two instances subjects wrote in the margin of the pretest, "I am unable to make an evaluation with no knowledge of sunshine laws." A significant number indicated totally neutral positions toward the sunshine laws on the pretest. After the message, however, the attitudes were markedly different. These findings tend to assure the researcher that the irrelevant topic was indeed one which was not interesting, familiar, nor controversial to the subjects. The discrepancy present between the results achieved in this study and those of earlier studies may thus be explained: The irrelevant topic used in this study was more irrelevant than those employed in other studies. Such irrelevant topics have included revenue sharing, cancer research, and the need for bomb shelters.
Schultz maintained that primacy is to be expected when topics that are highly interesting, controversial, and familiar are employed. A recency effect, or no effect, is expected for topics that are not familiar, interesting, or controversial. As indicated above, the results of the current study do not support this hypothesis. If one compares the results of prior experiments with the results of this study, support is offered for an "incremental effect" for message relevance such that highly relevant messages may produce more attitude change and recall than moderately relevant messages, but not more than highly irrelevant messages. Specifically, however, this conjecture is offered as a speculative explanation, and empirical support is lacking. Certainly more research is required.

Research Question 2

The third research question sought effects due to order of presentation in a two-sided communication. The first important result uncovered here has already been developed in the discussion of the three-way interaction of order by esteem by sex in research question 1. Basically, a primacy effect was observed among females high in esteem, while females low in esteem manifested a recency effect.

Secondly, it was discovered that the con-pro order of presentation in the irrelevant condition produced more positive agreement than any other experimental condition. This implies that if a speaker is discussing a relatively uninteresting, unfamiliar, and uncontroversial topic, it is best to place the con arguments first. This does not prove, however, that it is best to use this same
patterning with highly interesting, familiar, and controversial topics. Finally, this result must be interpreted in light of the fact that the topic used for the irrelevant condition was completely novel for a few students.

No significant differences were present in an assessment of the effects of order of presentation on recall.

Research Question 4

The fourth research question concerned the ability of recall to mediate the persuasive impact of a message. The Miller and Campbell model is even founded on that conceptual basis. Had this been a true relationship, the correlation between the amount of material recalled and amount of attitude change created would have been high. The results did not support this hypothesis.

Anderson has suggested a possible explanation for this result. He argued that there are two separate memory systems in operation in general primacy-recency studies. In impression formation studies, subjects are subjected to short lists of adjectives, and thus depend on the memory mechanism of "word memory". In the experimentally induced primacy studies the subjects absorb approximately equal amounts of information using an "idea memory", and yet differ considerably in their attitudinal response to the messages. Perhaps this could account for the negligible degrees of correlation found.

Research Question 5

As reported in chapter three, the data for this research question indicate a relatively small amount of variance explained in predicting attitude change and recall on the basis of the five predictor variables. Perhaps there are other more important variables operative in the order effects paradigm, which, if incorporated along with the subjects' dogmatism, sex, self-esteem, and order of presentation, and relevance of material, will account for a greater confidence in predicting attitude change and recall.

Still, however, the question arises as to why significant category differences occurred, and yet the regression equations produced were weak. Perhaps the relationships among the variables take on a nonlinear relationship.

In order to make the assumed nonlinear relationships linear, when the exact nonlinear forms are unclear—as in the present case—polynomial regression may be employed. The general form of a multivariate polynomial equation is given by

\[ Y' = A + B_1 X_1^1 + B_1^2 X_1^2 + B_1^3 X_1^3 + \ldots + B_2^1 X_2^1 + B_2^2 X_2^2 + B_2^3 X_2^3 + \ldots + B_3^1 X_3^1 + B_3^2 X_3^2 + B_3^3 X_3^3 + \ldots + B_k^k X_k^k \]

where \( Y' \) is the estimated value for \( Y \), \( A \) is the \( Y \) intercept, and \( B_i \) are the regression coefficients. This equation differs from the simple regression coefficient in that new terms are created and added, hence the name polynomial. The new terms are successive powers of the original predictor variables. The original variable is entered first, the second squared term is entered on the second step, the third cubed term is entered on the third step and so on. In this manner a curved regression line may be formed, and predictive accuracy increased.
The use of polynomial regression still, however, did not increase the assurance of the predictive equation. In fact, the R Squares for all the equations were similar to those of the simple regression equation (see table 30). This indicates that the variables are at least moderately linear. Obviously other variables are important and perhaps even necessary in order to predict attitude change and recall. Certainly future research should take these and other variables into account to explain even greater degrees of variation in attitude change and recall.

Summary

The conclusions from this quantitative research project have led to a somewhat clear answer to the research questions. It was found that subject dogmatism, self-esteem, sex, relevance of material, and order of presentation differentially affect attitude change and recall. The data suggest that the theoretical explanations for order effects are important for a background of research, but are not the appropriate means to answer the questions inherent in the question of primacy-recency. Perhaps future research should concentrate on the variables approach to the issue and uncover all the concomitant factors that influence but not directly cause primacy or recency. In light of this present variables approach study, that option is promising.
<table>
<thead>
<tr>
<th>Criterion Variable</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Most Acceptable Position</td>
<td>0.025</td>
</tr>
<tr>
<td>Change in Frequency of Acceptance Position</td>
<td>0.005</td>
</tr>
<tr>
<td>Change in Frequency of Rejection Position</td>
<td>0.088</td>
</tr>
<tr>
<td>Change in Frequency of Noncommitment Position</td>
<td>0.103</td>
</tr>
<tr>
<td>Change in Average Acceptance Position</td>
<td>0.090</td>
</tr>
<tr>
<td>Change in Average Rejection Position</td>
<td>0.093</td>
</tr>
<tr>
<td>Change in Average Noncommitment Position</td>
<td>0.013</td>
</tr>
<tr>
<td>Recall</td>
<td>0.086</td>
</tr>
</tbody>
</table>

a = p < .05, b = p < .01, c = p < .001
Proponents of sunshine laws feel a serious need to continue the enforcement of these laws not only on the Federal level but also on the State and Local level. This need revolves around the concept on which a Democracy is founded: The right of every citizen to know. A sunshine law fills that need by allowing citizens to attend governmental meetings. On the Federal level approximately fifty agencies, including the Federal Trade Commission, the Interstate Commerce Commission, and the influential Securities Exchange Commission, are presently covered by a 1974 law which required the opening of most meetings to the public. The law specified nine exceptions for which a meeting may be closed as in the case of an agency discussing matters involving the national security, confidential matters, and industrial trade secrets. On the State and Local level numerous laws have been created to open agency meetings to the public, allowing for similar exemptions.

The end result of such legislation is obvious. Interested citizens now have the important opportunity to attend agency meetings and be informed of such operations, which may, in turn, help eliminate citizen discontent. Concerned businesses may be able to forestall unpleasant surprises by being aware that an agency regulation is on the way, as well as knowing the regulators' intent. Finally, the laws may help members of the agency realize that there are more people out there than the members of the industry they regulate.

Opponents of sunshine laws feel an earnest need to eliminate, or at least curb the use of the laws which allow citizens to attend Federal, State or Local agency meetings. Currently citizens may attend the agency meetings of about fifty Federal agencies and numerous State and Local agencies in all instances except those exempted by law. While the right to be informed is a truly Democratic ideal, the laws cannot bring about increased awareness in the public for several reasons.

First, it is fair to assume that the citizen who sincerely wishes to be informed is a member of a distinct minority. In most instances the majority of people attending the open meetings are lobbyists for special interest groups and certain public interest groups; in general the public stays away. It is simply not fair to construct and enforce a law for such an indifferent and apathetic minority.

Secondly, many agencies continue to close their doors by stretching the exemptions which allow them to do so if it is likely that an open meeting will frustrate the implementation of the proposed agency action. Few citizens contest these closures.

Moreover, the implementation of the laws increases the glut of governmental paperwork as agendas must be made public a week in advance and transcripts of all discussion is required. This fact obviously concerns businesses, for the prospect of having statements offered in a private meeting made public by the requests of other businesses for such transcripts is an ever present and terrible fear.

For these reasons opponents argue that the laws should be eliminated or at least curbed.
Some would agree that Western Kentucky University could benefit from a co-ed dorm policy. The words "co-ed dorm" no doubt bring to mind for some if not most people the picture of a boy and girl rooming together sharing everything but clothes. This, however, is not always the case, for there are numerous options for co-ed facilities. A co-ed dorm may be one in which men and women share different wings, or different floors, or adjoining rooms, or in a few isolated examples, the same room.

Among existing co-ed facilities around the nation certain advantages have been uncovered. First, a "family image" seems to develop among students in co-ed dorms. Students easily fall into brother-sister relationships, and thus explicit sexual affairs seldom develop between those involved. Several studies indicate that students in such dorms tend to have more active social lives, more self confidence, and do better in coursework than those in traditional dorms. The studies also indicate that due to strong peer pressure, lack of privacy, and activity programs, much nonsexual friendship develops and group participation increases. Also, there appears to be an educational value for co-ed residence, namely that of a better learning environment. As one male student put it: "When you are separated from the girls, all you think of are girls."

Concerning the inadequacy of physical facilities, in most instances no changes would be required. In nearly all instances, students could share separate wings of the same building. Where there are communal bathroom facilities there could be alternating floor arrangements: where facilities between the rooms are shared, students could be suit mates or at least share the same floor, and possible even be roommates.

For these reasons Western could benefit from a co-ed dorm policy. Opponents of co-ed dormitory facilities argue that Western would not benefit from a policy which would allow men and women to share different wings, floors, rooms, or even the same rooms of a building. In fact, certain problems are expected with such a policy.

The students who have endured such experiences constantly bemoan the total absence of privacy and the loss of camaraderie among those of the opposite sex. Too often they vie for attention among themselves, and as a consequence spend far too little time with those of the same sex, a consequence indicative of anything but the "family image."

Relatively few qualified studies have been conducted to assess the educational implications, and no clear concise advantages have been found. Little educational merit exists for such a policy.

In terms of the development of nonsexual friendships, an overwhelming advantage exists for the traditional dorms if one considers the quality of friendships. Co-ed friendships often develop due to the close proximity, and are often shallow and surface in nature. Traditional friendships are generally more substantial and long-lasting.

A major problem arises when one also considers the present inadequacy of physical facilities. In many instances the buildings would not adequately accommodate the needs of co-ed residence due to communal bathrooms, bathrooms between rooms, and elevators that open on all floors. The cost to correct those inadequacies would be excessively high.

For these reasons Western would not significantly benefit from such a policy.
INSTRUCTIONS: Place an "A" in the blanks above all the percentages with which you would agree. Circle the one "A" that best reflects your feelings about sunshine laws (or co-ed dormitory policies, depending on the subject's condition). Indicate all the percentages you would reject by placing an "R" in the blanks above those percentages. Indicate the percentages about which you have no commitment by placing a "✓" in the blanks above those percentages. Make your evaluation according to all three continuums. For example:

EDUCATION IS:

Important A : ✓ : A : ✓ : ✓ : R : R : R : R : Trivial
100% 75% 50% 25% 0% 25% 50% 75% 100%

This student felt that education is 75% important but was also willing to accept that it may be 100% to 25% important. He rejected education being 25% to 100% trivial and was not committed about it being 0% important or trivial.

SUNSHINE LAWS ARE: (or CO-ED DORMITORY POLICIES ARE:)

Good
100% 75% 50% 25% 0% 25% 50% 75% 100%

Foolish
100% 75% 50% 25% 0% 25% 50% 75% 100%

Valuable
100% 75% 50% 25% 0% 25% 50% 75% 100%
APPENDIX C
RECALL QUESTIONNAIRES

Sunshine Laws Speech

1. The 1974 law required how many Federal agencies to have open meetings? A) 30 B) 40 C) 50 D) 9

2. How many exceptions did the 1974 law provide? A) 9 B) 11 C) 13 D) 15

3. Sunshine laws may help to eliminate what? A) Agency corruption by business interests B) Citizen discontent C) Unfair agency regulation D) none of the above

4. Who is a member of a distinct minority? A) Lobbyists who want to be informed B) Public interest groups who want to be informed C) Citizens who want to be informed D) Regulators who want to be reformed

5. The agencies continue to close meetings by A) Notation voting B) Refusing to meet C) Stretching exemptions D) All of the above

5. Governmental paperwork is increased by sunshine laws because A) agendas must be made public one week in advance B) Transcripts of discussion must be kept C) Neither A nor B D) Both A and B

Co-Ed Dorm Speech

1. A dorm may be co-ed if A) men and women share different wings B) men and women share different floors C) men and women share the same room D) all of the above

2. Studies indicate students in co-ed dorms A) do worse in coursework B) lead more active social lives C) have less self confidence D) all of the above

3. Due to _____ much nonsexual friendship develops in co-ed dorms. A) strong peer pressure B) lack of privacy C) activity programs D) all of the above

4. In traditional dorms there are A) fewer nonsexual friendships B) better nonsexual friendships C) both A and B D) neither A nor B

5. Students often spend time in co-ed dorms A) mostly with members of the same sex B) mostly with the opposite sex C) about the same with members of both sexes D) mostly alone
6. There is A) less camaraderie in co-ed dorms B) more camaraderie in co-ed dorms C) about the same level of camaraderie in both types of dorms

APPENDIX D

DOGMATISM SCALE

INSTRUCTIONS: Place an "X" in the blank above the position that most nearly reflects your feelings about yourself. Make your evaluation according to each statement. (* indicates item included in the final 6-item short form.)

1. In this complicated world of ours the only way to know what's going on is to rely on leaders and experts who can be trusted.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

2. My blood boils whenever a person stubbornly refuses to admit he's wrong.

3. There are two kinds of people in this world: those who are for the truth, and those who are against the truth.

4. Most people just don't know what's good for them.

5. Of all the different philosophies which exist in this world, there is probably only one which is correct.

6. The main thing in life is for a person to want to do something important.

7. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

8. It is only when a person devotes himself to an ideal or cause that life becomes meaningful.

9. It is often desirable to reserve judgement about what's going on until one has had a chance to hear the opinions of those one respects.

10. Most people really don't care about others.
APPENDIX E

SELF ESTEEM SCALE

INSTRUCTIONS: Place an "X" in the position that most nearly reflects your feelings about yourself. Make your evaluation according to each set of statements.

I am often bothered with feelings of uselessness. __:__:_:_:_:_:_:_:_:_
I am seldom bothered with feelings of uselessness.

I basically think of myself as an unhappy person. __:__:_:_:_:_:_:_:_:_
I basically think of myself as a happy person.

I am seldom bothered with feelings of inferiority. __:__:_:_:_:_:_:_:_:_
I am frequently bothered with feelings of inferiority.

I feel I can do most things well. __:__:_:_:_:_:_:_:_:_
I often feel there is nothing I can do well.

I am often afraid. __:__:_:_:_:_:_:_:_:_
I am seldom afraid.

I have very much to be proud of. __:__:_:_:_:_:_:_:_:_
I have very little to be proud of.

I often wish I were someone else. __:__:_:_:_:_:_:_:_:_
I am glad I am myself.

There are few things about myself I would change if I had the chance. __:__:_:_:_:_:_:_:_:_
There are many things about myself I would change if I had the chance.

I am confident my plans will turn out the way I want them to. __:__:_:_:_:_:_:_:_:_
I often doubt my plans will turn out the way I want them to.

I seldom get discouraged. __:__:_:_:_:_:_:_:_:_
I often get discouraged.


Hovland, Carl I., Author A. Lumsdaine, and Fred D. Sheffield.  


________. "Experimental Attempts to Minimize the Impact of First Impressions." In Carl I. Hovland, ed. *The Order of Presentation*, pp. 52-78.


LIST OF ABBREVIATIONS

JASP: Journal of Abnormal and Social Psychology
JAP: Journal of Applied Psychology
JC: Journal of Communication
JP: Journal of Psychology
JPSP: Journal of Personality and Social Psychology
QJS: Quarterly Journal of Speech
SM: Speech Monographs
SPSS: Statistical Package for the Social Sciences