INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in “sectioning” the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.

University Microfilms International
300 N. Zeeb Road, Ann Arbor, MI 48106
18 Bedford Row, London WC1R 4EJ, England
LEIPPE, MICHAEL RAYMOND
MESSAGE EXPOSURE DURATION AND ATTITUDE
CHANGE: AN INFORMATION PROCESSING ANALYSIS
OF PERSUASION.

THE OHIO STATE UNIVERSITY, PH.D., 1979
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark ✓.

1. Glossy photographs □
2. Colored illustrations □
3. Photographs with dark background □
4. Illustrations are poor copy □
5. Print shows through as there is text on both sides of page □
6. Indistinct, broken or small print on several pages ✓ throughout □
7. Tightly bound copy with print lost in spine □
8. Computer printout pages with indistinct print □
9. Page(s) □ lacking when material received, and not available from school or author □
10. Page(s) □ seem to be missing in numbering only as text follows □
11. Poor carbon copy □
12. Not original copy, several pages with blurred type □
13. Appendix pages are poor copy □
14. Original copy with light type □
15. Curling and wrinkled pages □
16. Other □

University Microfilms International

300 N. ZEEB RD., ANN ARBOR, MI 48106 (313) 761-4700
MESSAGE EXPOSURE DURATION AND ATTITUDE CHANGE:
AN INFORMATION PROCESSING ANALYSIS OF PERSUASION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By
Michael Raymond Leippe, B.A., M.A.

* * * * *

The Ohio State University
1979

Reading Committee: Approved By

Dr. Anthony G. Greenwald
Dr. Thomas M. Ostrom
Dr. Robert C. MacCallum

Advisor
Department of Psychology
I dedicate this dissertation to my father, Raymond Leippe.
ACKNOWLEDGMENTS

This dissertation could not have been accomplished without the help and support of many people, to whom I am deeply grateful. I wish to give special thanks to:

Dr. Anthony Greenwald, my advisor, for his thoughtful guidance and insistence on excellence, which have always proved to be valuable,

Dr. Thomas Ostrom, for serving on my dissertation committee and, more so, for sharing his enthusiasm for social psychology,

Dr. Robert MacCallum, for serving on my dissertation committee,

Dave Ronis, Rich Petty, and Dr. Timothy Brock, for helpful comments on methodology and theory,

Mike Baumgardner, my closest colleague, for his never-failing friendship through both the best and the hardest of graduate school times,

Gary Wells, for giving me encouragement when I needed it most,

Karl Rosenberg, for assistance with the computer, and Keith Widaman, for statistical advice,
Dr. Eric Knowles, for his helpful advice and for providing access to computer facilities at UW-Green Bay,
Barb Smits, for expert typing of this dissertation under an imposing deadline,
Drs. Ladd Wheeler and Miron Zuckerman, who turned me on to social psychology in the first place,
Joe and Lucy Amico, my dear in-laws, for their warm and consistent support.

Then, there are several people who are dearest to me and who must be acknowledged in a category by themselves:
My mother, Anne, for the support she’s always given me and for simply being the best friend I’ve ever had,
My father, Ray, to whom I dedicate this dissertation; his faith and pride in me were sources of self-confidence which I often needed,
My children, Raeanne and Beth, whose hugs and kisses alone made it all worthwhile.
Finally, I thank most my wonderful wife, Pat, for her love and for her patience, which is a necessary trait for any graduate student's spouse.
VITA

Birthdate: April 10, 1952
Place of birth: Rochester, New York
Marital status: Married; two children
Address: 1811 Nancy Avenue
Green Bay, WI 54303
(414) 499-0130
Office address: Department of Psychology
St. Norbert College
De Pere, Wisconsin 54115
(414) 337-3184

EDUCATIONAL HISTORY

B.A. University of Rochester, 1974
  Major: Psychology
  Minor: Sociology

M.A. Ohio State University, 1976
  Major: Social Psychology

Ph.D. Ohio State University, 1979
  Major: Social Psychology
  Minors: Statistics, Industrial/Organizational Psychology
  Dissertation title: Message Exposure Duration and Attitude Change: An Information Processing Analysis of Persuasion

AWARDS AND HONORS

1970-1974 New York State Regents Scholarship
1970-1974 New York State Regents Scholar Incentive Award
1971-1974 University Scholarship, University of Rochester
1974 B.A. Degree with Distinction, University of Rochester
PROFESSIONAL EMPLOYMENT

1974-1976 Graduate Research Assistant to Anthony G. Greenwald, Ohio State University. Research on persuasive communications, attitude change, and persistence of persuasion.

1976-1977 Graduate Teaching Associate (Introductory Psychology), Ohio State University. Position involved full responsibility for 5 introductory psychology sections, each of which contained 40-50 students.

1977 Graduate Teaching Associate (Social Psychology), Ohio State University. Position involved organizing and leading weekly discussion meetings of an undergraduate social psychology course, and responsibility for constructing and grading essay examinations.

1978 Graduate Research Assistant to Anthony G. Greenwald, Ohio State University.


AREAS OF SPECIALIZATION (TEACHING INTERESTS)

General Psychology
Social Psychology
Industrial/Organizational Psychology
Attitudes and Persuasive Communication
Psychology and the Law
Impression Formation and Social Cognition
Research Methodology
Group Decision Processes
Statistics
Psychological Testing and Measurement
UNPUBLISHED PAPERS


CONVENTION PRESENTATIONS


PUBLICATIONS

PUBLICATIONS (CONT.)


PAPERS IN PREPARATION


EDITORIAL EXPERIENCE

Reviewer for *Representative Research in Social Psychology*.

ANCILLARY SKILLS AND EXPERIENCE

Experience in programming a NOVA 1220 computer was gained in the use of a timeshared, data acquisition system for conducting research on persuasion. Other computer experience includes use of standard data analysis programs (e.g., CANOVA, MANOVA, SAS, SOUPAC, SPSS).
ANCILLARY SKILLS AND EXPERIENCE (CONT.)

Assisted in developing attitudinal surveys and in designing program assessment methods for the City of Columbus Citizens' Crime Watch project.

Served on Executive Committee of the Ohio State Social Psychology Doctoral Program Evaluation Project. Responsibilities included assisting in organizing and implementing a program evaluation of a social psychology doctoral program, reviewing data collected by subcommittees, and making recommendations based on the data.

REFERENCES

Dr. Anthony G. Greenwald, Ohio State University, Department of Psychology, 404C West 17th Avenue, Columbus, Ohio 43210.
Phone: 614/ 422-1588

Dr. Thomas M. Ostrom, Ohio State University, Department of Psychology, 404C West 17th Avenue, Columbus, Ohio 43210.
Phone: 614/ 422-1571

Dr. R. Reed Hardy, St. Norbert College, Department of Psychology, De Pere, Wisconsin 54115.
Phone: 414/ 337-3209.

Ms. Beatrice Appleby, St. Norbert College, Department of Psychology, De Pere, Wisconsin 54115.
Phone: 414/ 337-3183
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>VITA</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I.  INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Information Processing and Persuasion:</td>
<td></td>
</tr>
<tr>
<td>Theoretical Background</td>
<td>3</td>
</tr>
<tr>
<td>Theoretical Integration: A Three-Stage Information Processing Model of</td>
<td></td>
</tr>
<tr>
<td>Persuasion</td>
<td>12</td>
</tr>
<tr>
<td>Amount of Processing and Persuasion:</td>
<td>18</td>
</tr>
<tr>
<td>Research and Theory</td>
<td></td>
</tr>
<tr>
<td>II. EXPERIMENT 1</td>
<td>52</td>
</tr>
<tr>
<td>Method</td>
<td>52</td>
</tr>
<tr>
<td>Results</td>
<td>62</td>
</tr>
<tr>
<td>Discussion</td>
<td>75</td>
</tr>
<tr>
<td>III. EXPERIMENT 2</td>
<td>82</td>
</tr>
<tr>
<td>Method</td>
<td>84</td>
</tr>
<tr>
<td>Results</td>
<td>91</td>
</tr>
<tr>
<td>Discussion</td>
<td>105</td>
</tr>
<tr>
<td>IV. EXPERIMENT 3</td>
<td>112</td>
</tr>
<tr>
<td>Pilot Experiment</td>
<td>113</td>
</tr>
<tr>
<td>Method</td>
<td>119</td>
</tr>
<tr>
<td>Results</td>
<td>121</td>
</tr>
<tr>
<td>Discussion</td>
<td>127</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (CONTINUED)

V. EXPERIMENT 4 ................................... 134
   Method ........................................... 135
   Results .......................................... 140
   Discussion ...................................... 156

VI. CONCLUSIONS AND IMPLICATIONS ..................... 188

VII. SUMMARY ............................................. 195

LIST OF REFERENCES ....................................... 199

FOOTNOTES ............................................ 209

APPENDIX
   A. MESSAGES AND MEASURES .......................... 211
   B. INSTRUCTIONS FOR EXPERIMENT 1 ............... 218
   C. INSTRUCTIONS AND OTHER MATERIALS FOR
      EXPERIMENT 2 .................................... 226
   D. INSTRUCTIONS FOR EXPERIMENT 3 ............... 241
   E. INSTRUCTIONS FOR EXPERIMENT 4 ............... 255
   F. PILOT EXPERIMENT FOR DEVELOPMENT OF THE
      MESSAGE EXPOSURE DURATION MANIPULATION ....... 263
   G. LIST OF MULTIVARIATE TESTS OF REPLICATION
      FACTORS EFFECTS (ALL EXPERIMENTS) ........... 271
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Within-Cell Correlations of Pretest-Adjusted Opinion with Message Repetition Reading Time and Message Content Retention in Experiment 1</td>
<td>76</td>
</tr>
<tr>
<td>2. Within-Cell Correlations of Pretest-Adjusted Opinion, Judged Message Validity, Message Repetition Reading Time, and Message Content Retention in Experiment 2</td>
<td>104</td>
</tr>
<tr>
<td>3. Within-Cell Correlations of Pretest-Adjusted Opinion and Message Validity Judgment in Experiment 3</td>
<td>126</td>
</tr>
<tr>
<td>4. Within-Cell Correlations of Pretest-Adjusted Opinion, Message Validity Judgment, Message Repetition Reading Time, and Indices of Message Retention in Experiment 4</td>
<td>154</td>
</tr>
<tr>
<td>5. Observed Correlations, Predicted Correlations, and the Decomposition of Predicted Correlations in the Path Analysis of Experiment 4 Data (High Message Quality Condition)</td>
<td>178</td>
</tr>
<tr>
<td>6. Observed Correlations, Predicted Correlations, and the Decomposition of Predicted Correlations in the Path Analysis of Experiment 4 Data (Low Message Quality Condition)</td>
<td>185</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hypothetical relationships between amount of information processing and persuasion.</td>
<td>46</td>
</tr>
<tr>
<td>2.</td>
<td>Estimated mean opinion change in Experiment 1 as a function of message duration</td>
<td>67</td>
</tr>
<tr>
<td>3.</td>
<td>Opinion posttest means in those conditions of Experiment 1 where an opinion response was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message.</td>
<td>68</td>
</tr>
<tr>
<td>4.</td>
<td>Mean time (in seconds) spent reading message repetitions in Experiment 1 as a function of duration of initial message presentation.</td>
<td>71</td>
</tr>
<tr>
<td>5.</td>
<td>Mean time (in seconds) spent reading message repetitions in Experiment 1 as a function of duration of initial message presentation, block, and treatment sequence.</td>
<td>72</td>
</tr>
<tr>
<td>6.</td>
<td>Message content memory in Experiment 1: Mean number (maximum = 2) of message argument descriptions identified as a function of message duration.</td>
<td>74</td>
</tr>
<tr>
<td>7.</td>
<td>Estimated mean opinion change in Experiment 2 as a function of message duration and appraisal set.</td>
<td>94</td>
</tr>
<tr>
<td>8.</td>
<td>Opinion posttest means in those conditions of Experiment 2 where an opinion response was obtained both after the initial (fixed duration) presentation and after an untimed repetition of the message.</td>
<td>96</td>
</tr>
<tr>
<td>9.</td>
<td>Mean message validity judgment in Experiment 2 as a function of message duration and appraisal set.</td>
<td>98</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES (CONTINUED)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Mean time (in seconds) spent reading message repetitions in Experiment 2 as a function of duration of initial message presentation.</td>
<td>99</td>
</tr>
<tr>
<td>11.</td>
<td>Mean time (in seconds) spent reading message repetitions in Experiment 2 as a function of duration of initial message presentation and direction-sequence replication.</td>
<td>101</td>
</tr>
<tr>
<td>12.</td>
<td>Message content memory in Experiment 2: Mean number (maximum = 2) of message argument descriptions correctly identified as a function of message duration.</td>
<td>103</td>
</tr>
<tr>
<td>13.</td>
<td>Results of the pilot study of Experiment 3. (A) Mean estimated opinion change and (B) mean message validity judgment as a function of message duration and message quality.</td>
<td>117</td>
</tr>
<tr>
<td>14.</td>
<td>Mean estimated opinion change in Experiment 3 as a function of message duration and message quality.</td>
<td>122</td>
</tr>
<tr>
<td>15.</td>
<td>Mean message validity judgment in Experiment 3 as a function of message quality and message duration.</td>
<td>124</td>
</tr>
<tr>
<td>16.</td>
<td>Mean estimated opinion change in Experiment 4 as a function of message duration and message quality.</td>
<td>141</td>
</tr>
<tr>
<td>17.</td>
<td>Opinion posttest means in those conditions of Experiment 4 where an opinion response was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message.</td>
<td>142</td>
</tr>
<tr>
<td>18.</td>
<td>Mean message validity judgment in Experiment 4 as a function of message duration and message quality.</td>
<td>144</td>
</tr>
<tr>
<td>19.</td>
<td>Validity judgment means in those conditions of Experiment 4 where a validity judgment was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message.</td>
<td>148</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>20.</td>
<td>Mean time (in seconds) spent reading message repetitions in Experiment 4 as a function of duration of initial message presentation and message quality.</td>
<td>149</td>
</tr>
<tr>
<td>21.</td>
<td>Message retention in Experiment 4: (A) Proportion of correct identifications of the message conclusion and (B) mean number of message lines recognized (maximum = 2) as a function of message duration and message quality.</td>
<td>151</td>
</tr>
<tr>
<td>22.</td>
<td>Theoretical causal relationship assumed to underlie the message quality effects of Experiment 4.</td>
<td>163</td>
</tr>
<tr>
<td>23.</td>
<td>Alternative causal models of the persuasion process mediating the effects of message duration.</td>
<td>167</td>
</tr>
<tr>
<td>24.</td>
<td>Results of path analysis of the high message quality condition of Experiment 4. (A) Results of analysis of the information processing model given in Figure 23. (B) Results of analysis of a revised model.</td>
<td>175</td>
</tr>
<tr>
<td>25.</td>
<td>Results of path analysis of the low message quality condition of Experiment 4. (A) Results of analysis of the revised information processing model that was derived through analysis of the high message quality condition data. (B) Results of analysis of an additionally revised model.</td>
<td>184</td>
</tr>
<tr>
<td>26.</td>
<td>Mean message reading time (in seconds) in the pilot experiment reported in Appendix F as a function of reading pace and ordinal position of the message in a sequence of 18 messages.</td>
<td>265</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

The amount of time that a person is exposed to a single persuasive communication is a variable that has received almost no attention from persuasion researchers. Yet several considerations, both practical and theoretical, suggest that message exposure duration is an important variable to study. First of all, to the extent that persuasion involves time-consuming mental processes such as comprehension, encoding, and appraisal of the message, message exposure duration is apt to have significant effects on the amount of attitude change produced by a given message. Secondly, if message exposure duration has effects on persuasion, there are plenty of occasions for such effects to occur in the everyday world. One can readily think of instances in which message exposure duration varies. A list of just a few examples would include the duration of presentation of written material in TV commercials; speed reading vs. normal reading; speech rate; and, finally, the difference between the written and audio/visual media of communication transmission, where the former usually involves self-paced reading and the latter involves listening to a speaker who
determines his/her speech rate. An understanding of the effects of message exposure duration, then, has considerable practical application.

A third advantage of studying message exposure duration is the usefulness of this variable in testing a theoretical analysis of the persuasion process. Increasingly, social psychologists have become concerned with understanding the information processing involved in persuasion (e.g., Fishbein & Ajzen, 1975; Greenwald, 1968; McGuire, 1968; 1972; Petty, Ostrom, & Brock, 1979). Since it has direct effects on a message recipient's ability to process information, message exposure duration may serve as a useful independent variable in persuasion research.

This dissertation explores the effects of message exposure duration on persuasion (a) to test an information processing model of persuasion and (b) to contribute practical knowledge about the effects of a pervasive real-world variable. To accomplish these goals, the introductory chapter develops a theoretical model from consideration of existing approaches and a review of some relevant empirical literature. The model considers the cognitive mediators of persuasion and the relationship between amount of information processing and persuasion. Several hypotheses about the relationship between message exposure duration and persuasion are then derived from the model, and four experiments are reported in which these hypotheses are tested.
Information Processing and Persuasion: Theoretical Background

An information processing approach to persuasion is characterized by the basic assumption that persuasion is the end product of the reception, encoding, and cognitive integration of information relevant to an attitudinal topic. Among contemporary models of persuasion, two approaches, the learning theory approach and the cognitive response approach, best fit this description. These models differ, however, in the type of information processing that they consider critical in mediating persuasion.

The Learning Theory Approach

The learning theory model was advanced originally by Carl Hovland and his associates (Hovland, Lumsdaine, & Sheffield, 1949; Hovland, Janis, & Kelley, 1953; Hovland, Mandell, Campbell, Brock, Luchins, Cohen, McGuire, Janis, Feierarbind, & Anderson, 1957) and more recently by McGuire (1968; 1969; 1972). According to this approach, successful persuasion involves three successive information processing steps: attention to a message, comprehension of the message content, and acceptance of the message conclusion. Given that a message is attended to and comprehended, persuasion is assumed to result if the message recipient is given sufficient incentives to accept (or yield to) the message conclusion. In most cases, the arguments and reasoning provided in the content of the message constitute strong
incentives to acceptance, since these are indicative of the correctness of holding the message conclusion as an opinion and/or of the social reinforcement the recipient can expect from espousing the conclusion. Since such incentives to accept the message conclusion will only be recognized to the extent that the message is comprehended, message comprehension is assumed in the learning theory approach to be a primary determinant of persuasion. Except when there is a strong incentive to reject the message conclusion, such as additional information that the message source is incredible or dislikable, persuasion should be a direct function of how much comprehension or learning of the message occurs. To quote McGuire (1969), "...immediate opinion change is proportional to the amount of message learning."

In support of this learning theory view, strong manipulations of message comprehensibility have been found to produce reliable effects on persuasion. Eagly (1974), for example, presented subjects with a message advocating less sleep than is commonly considered healthy, and varied message comprehensibility either by overrecording and creating background noise when the message was presented by audiotape, or by disruption of the ordering of sentences when the message was presented in a written version. In three separate experiments, both the amount of attitude change and the number of message arguments recalled following the message decreased as message comprehensibility was reduced. In
another study, Chaiken & Eagly (1976) observed that when a message presentation factor, communication modality, had strong effects on message comprehension, its effects on persuasion were as predicted by the learning theory approach. Relative to either a video or audio presentation, a written presentation of a highly technical message about a fictitious court case was both significantly better comprehended and significantly more persuasive.

Studies that have varied the amount of persuasive information in a message have also supported the idea that persuasion is a function of the amount of message information that is comprehended. Calder, Insko, and Yandell (1974), for example, exposed subjects to either one or seven arguments favoring the prosecution in a bigamy trial, and either one or seven arguments favoring the defense. Attitude toward the defendant was more favorable as the number of defense arguments increased, and less favorable as the number of prosecution arguments increased. This result was replicated by Insko, Lind, & Latour (1976). Similarly, Baumgardner, Leippe, Ronis, & Greenwald (1978) found that persuasive messages on contemporary issues produced more attitude change when they contained four different arguments than when they contained one.

In contrast to the generally supportive results of experiments that directly manipulated amount of comprehensible message information, studies that have examined the
correlations between persuasion and indices of message comprehension (e.g., retention of message content) have produced little support for the learning theory approach. These studies have consistently found only low to moderate correlations among these variables (e.g., Baumgardner et al., 1978; Greenwald, 1968; Miller & Campbell, 1959; Papageorgis, 1963; Watts, 1967; Watts & McGuire, 1964; Wilson & Miller, 1968). For example, Miller & Campbell (1959) found moderate within-cell correlations of +.49 and +.27 between attitude and scores on a 28-item test of message content recall when the measures immediately followed a communication about a fictitious court case. When measurement was delayed one week, however, the correlations were negative (r's = -.51 and -.40). In a similar study, Insko (1964) reported an average (of immediate and delayed post-test cells) within-cell correlation of +.10. Other reported correlations between opinion change and number of message arguments recalled immediately after the message range from -.13 (Osterhouse & Brock, 1970) and +.03 (Love, 1968) to +.21 (Janis & Rife, 1959), +.50 (Papageorgis, 1963), and +.53 (McGuire, 1957).

In the area of person perception, Anderson & Hubert (1963) have reported conceptually similar results; namely that the person impressions formed on the basis of a list of trait adjectives were unrelated to the ability to recall those traits.
The lack of a consistently strong within-cell relationship between amount of persuasion and memory for the persuasion-inducing message indicates that the learning theory approach does not give a complete account of the persuasion process. It seems that, among message recipients given the same message and the same chance to comprehend it, amount of message comprehension does not determine the amount of persuasive impact. This conclusion has helped spur the advent of the cognitive response approach.

The Cognitive Response Approach

The cognitive response approach departs from the learning model in viewing the communication recipient as an active participant in the persuasion process, rather than a passive recipient of message information. Specifically, as outlined by Greenwald (1968), this approach maintains that a message recipient reacts to incoming persuasive information by relating it to pre-existing attitudes, knowledge, and feelings about the communication topic. As a result, the person may consider a substantial amount of topic-relevant information that is not found in the communication itself. The outcome of this reactive process is a set of salient topic-relevant thoughts that may include only self-generated thoughts or a combination of self-generated thoughts and thoughts derived from the message. Attitude change is assumed to hinge on the evaluative nature of these thoughts, rather than the extent of message.
comprehension. Attitude will change toward the message position to the extent that the message evokes thoughts or cognitive responses that are consistent with its position. If, on the other hand, the cognitive responses support an alternative position or a position antagonistic to the message position, attitude will remain unchanged or will change away from the message position.

As both Greenwald (1968) and Petty (1977; Petty, Ostrom & Brock, 1979) have observed, the idea that message recipients' active thought processes are important in persuasion substantially predates Greenwald's 1968 analysis. Hovland, Lumsdaine & Sheffield (1949), for example, suggested that message recipients may resist persuasion by reviewing their own arguments against the message conclusion, while Kelman (1953) noted the importance of "implicit supporting" and "implicit interfering" responses, characterized as self-verbalizations, in mediating acceptance of a persuasive appeal. And Festinger & Maccoby (1964) proposed that, rather than being a passive listener, a message recipient is "very actively, inside his own mind, counterarguing, derogating the points the communication makes" (p. 360).

In the empirical realm, several lines of research reported prior to 1968 produced results consistent with the cognitive response model. One such line of research is that which explored the differential persuasive effects of passive (e.g., listening to a speech) versus active (e.g.,
giving an informal talk or role-playing) participation. This research has typically found that active participation produces greater persuasion (Janis & King, 1954; King & Janis, 1956; Scott, 1957). For example, King & Janis (1956) had subjects either silently read a persuasive communication, read it aloud, or read it and then orally present their own improvised version of the communication. Subjects in the improvisation condition changed their attitudes significantly more than subjects in the oral and silent reading conditions, whose attitude change did not differ. These results are consistent with the notion that the persuasive impact of a communication is related to the recipient's own cognitive responses.

A second line of research relevant to the cognitive response model is that concerning McGuire's inoculation theory (cf. McGuire, 1964). In attempting to assess the determinants of resistance to persuasion, McGuire & Papageorgis (1961) presented subjects with counterattitudinal messages concerning generally unquestioned "cultural truisms" (e.g., people should brush their teeth regularly) after having first prepared them for the message in one of several ways. It was found that there was greater resistance to a subsequent persuasive attack when recipients were first exposed to a weaker attack accompanied by a refutation of that attack (refutational defense) than when recipients were first provided with information supportive
of their initial attitude. A subsequent experiment (Papageorgis & McGuire, 1961) found that this was true whether the refuted, pre-message attack dealt with arguments that were the same as or different from those that constituted the later, full-fledged attack. The interpretation of these findings is that the refutational defense motivates recipients to engage in belief-bolstering cognitive activity which ultimately allows them to actively resist (i.e. counter-argue) a persuasive appeal. This, of course, is consistent with the cognitive response model.

More recent support for the cognitive response viewpoint has come from correlational investigations of the relationship between the persuasive impact of a communication and measures of the recipient's cognitive responses. Cognitive responses usually have been measured using a face-valid technique developed by Brock (1967) and Greenwald (1968), which involves having subjects list their topic-relevant thoughts either during or following the communication presentation, and then having either the subjects or other judges rate the favorability of the listed thoughts toward the message position. This measure generally has been found to be more highly correlated with amount of persuasion than have measures of message memory. For instance, Cullen (1968) had college students read a message arguing for specialized undergraduate education and then had them list their thoughts and rate the favorability
of each thought. The correlation between the average favorability of a subject's thoughts and amount of attitude change was .65, considerably higher than the typical retention of message arguments—persuasion correlation. In another study, Love (1968) presented subjects with messages advocating popular election of the Secretary of State and admission of Puerto Rico as a U.S. state. While no relationship was found between number of arguments recalled and attitude change (average $r = .03$), both an index of the evaluative content of thoughts written during the communication exposure and an index of retention of these thoughts were found to be significant predictors of persuasion (average $r$'s = .52 and .30 for these two measures, respectively). Finally, in the series of experiments by Calder, Insko & Yandell (1974) described earlier, consistently significant positive correlations were found between the number of thoughts reported by subjects that favored the defense (or prosecution) in the bigamy trial, and the persuasion produced by the defense (or prosecution).

Overall, there seems to be considerable evidence for the role of cognitive responses in the persuasion process. The evaluative nature of the active cognitive responding of message recipients appears to be an important mediator of the extent to which the recipient is influenced by a message. Additional evidence for this conclusion has been obtained in studies assessing the effects of distraction on
persuasion. These studies will be reviewed later in the discussion of the relationship between persuasion and amount of information processing.

Theoretical Integration: A Three-Stage Information Processing Model of Persuasion

While the cognitive response model is both intuitive and consistent with several empirical findings, it is also not in conflict with the supposition that message comprehension plays an important role in persuasion. If cognitive responding involves relating message information to existing thoughts on a topic, it follows that some understanding of the message must precede the cognitive response process (cf. Insko, Turnbull, and Yandell, 1974). In other words, comprehension is essential in providing informational input into the process. In addition, if attitude is based on the thoughts that result from a cognitive response, then the persuasive potential of a message can only be reached to the extent that its content can contribute to those thoughts. The probability of such a contribution, of course, will be highest when comprehension is good. In short, message information does affect persuasion and so, necessarily, comprehension must be considered crucial even from a cognitive response perspective. Empirically, this can be seen readily from research cited earlier showing that persuasion is positively related to message
comprehensibility (Eagly, 1974) and number of arguments in a message (Baumgardner, et al, 1978; Calder et al., 1974).

This reasoning suggests an integrated information processing model of persuasion, in which message comprehensibility and a cognitive responding process that will be referred to as appraisal, are sequential stages in the encoding of attitude-relevant information. A third stage, involving the integration of the information made salient during the earlier, encoding stages, is also included in the model. The following paragraphs give a more specific description of each of the three stages.

**The comprehension stage.** This stage involves the process of comprehending the information in the message, where information includes the arguments in the message as well as information about such matters as source credibility and the position being advocated in the message.

**The appraisal stage.** This stage is characterized by the mental activities that have been considered to be aspects of the cognitive response process. These mental activities include (a) search for and retrieval from memory of stored topic-relevant ideas, (b) assessment of the logic and reasonableness of message arguments (as they were comprehended) and (c) assessment of the implications of message information for existing (and retrieved) thoughts and/or vice-versa. The comprehensiveness or inclusiveness of such appraisal processing will depend on the recipient's
motivational state, as determined by such factors as his involvement with the message topic, his interest, his knowledge, etc.

In some ways, the further processing of comprehended information during the appraisal stage corresponds to what memory researchers have referred to as greater depth of processing (cf. Craik & Lockhart, 1972). According to the depth of processing view, any perceptual stimulus, once recognized, may be cognitively elaborated through the triggering of associations and the matching of the stimulus against stored, abstract memories. Such cognitive activities involved in "deeper" processing are analogous to some of the activities assumed to characterize the appraisal stage in the present model.

An important question concerns the basis for separating comprehension and appraisal into distinct, temporally-ordered processes, rather than considering appraisal to accompany or otherwise be a part of the comprehension process. In discussing this issue, it first should be stressed that the model does not assume that appraisal commences only after comprehension of the entire communication. Rather, it is hypothesized that appraisal may follow comprehension of any subunit of the message, such as a single argument or a single proposition, that contains sufficient information for meaningful, attitude-relevant appraisal. Thus, in the course of reading or listening to a communication, the
recipient may alternate between comprehension and appraisal processing as the components of the message are successively presented. However, both processes will not occur at once.

Research on text comprehension has not explicitly addressed the issue of when the kind of appraisal described here might occur. Certainly, most contemporary models of comprehension assume that successful comprehension involves ongoing inferences on the part of the comprehender which require access to and use of world knowledge stored in the comprehender's memory (see, for example, Bransford & McCarrell, 1977; Kintsch & Van Dijk, 1978; Schank & Abelson, 1977). Most models, in fact, assume that such active processing and interpretation occurs automatically as part of comprehension. These mental operations involved in comprehension, however, are not the same as those that characterize appraisal processing. To begin with, the former are necessary for comprehension whereas appraisal is not. Something can be understood without being judged. In addition, appraisal processing is evaluative, while the inferences necessary for comprehension are not. In sum, while it is generally understood that comprehension requires active inputs on the part of the comprehender, it is not clear that such inputs include the appraisal operations described by the present model.

On intuitive grounds, the proposed stage relationship between comprehension and appraisal seems sensible. A
single argument within a communication usually will include several propositions which are linked by various semantic relations (cf., Kintsch & Van Dijk, 1978) and that possibly form a logical system (i.e., they include premises and a conclusion). To understand the meaning of only one argument therefore requires comprehension of several parts that comprise the argument. Accordingly, a good deal of comprehension would seem to be a necessary prerequisite to any evaluative appraisal of a complete, coherent argument. Furthermore, appraisal, as described above, can include a thoughtful evaluation of the complete message (e.g., the amount of information contained in the message might be evaluated). Such overall appraisal necessarily must follow an understanding and integration of multiple pieces of message information.

Given the sequential stage conceptualization of comprehension and appraisal, the final outcome of these encoding stages is assumed to be a set of salient thoughts about the message topic. Depending on factors such as pre-existing thoughts, message quality, and the extent of comprehension, these thoughts may be predominantly favorable or unfavorable toward the message position, or they may be neutral with regard to the message position. In addition, the resultant pool of thoughts will be a mixture of thoughts introduced by the message, pre-existing thoughts, and thoughts from both sources modified during the appraisal stage.
The integration stage. At this stage, it is assumed that an attitudinal judgment occurs on the basis of an integration of the thoughts made salient during the encoding stages. This integration is assumed to proceed according to a weighted averaging principle like that which Anderson (1971) has advanced with regard to the integration of externally-introduced pieces of information about people or attitude objects. Attitude at any given time is assumed to be a weighted average of the thoughts available for integration at that time. Thus:

\[ \text{Att} = \frac{\sum w_i f_i}{\sum w_i} \]

where \text{Att} is the attitude about the message topic, \( w_i \) is the weight or importance given to thought \( i \), and \( f_i \) is the favorableness of the thought toward the message position, which can take on either a positive (favorable) or negative (unfavorable) value.

The attitude change produced by the persuasive message, then, is a function of the difference in the number, favorableness, and importance of the thoughts available for integration after processing the message and the thoughts that would have been available in the absence of the message (i.e. if the individual were simply asked his opinion).
Algebraically,

\[
\text{Att} = \frac{\sum_{i} w_i f_i}{\sum_{i} w_i} \quad \text{after message processing} \quad \frac{\sum_{j} w_j f_j}{\sum_{j} w_j} \quad \text{before message processing}
\]

In sum, attitude change is a direct function of the thoughts resulting from the encoding stages. To the extent that message processing yields thoughts more favorable to the message position than those that would have been available without processing the message, attitude change will be in the direction of the message. To the extent that thoughts made salient during processing are less favorable, attitude change will be in the opposite direction (i.e., a boomerang effect).

Having stated a model of the persuasion process, attention can now be turned to extension of the model to the relationship between attitude change and the amount of comprehension and appraisal processing that occurs in a persuasion situation. This is undertaken in the following section.

**Amount of Processing and Persuasion: Research and Theory**

The information processing model just outlined posits three important stages in the process of persuasion. The first two stages, message comprehension and appraisal, yield topic-relevant thoughts, the number and quality of which are presumed to determine directly the amount and direction of
persuasion. Certainly, the mental processes represented by these encoding stages are not instantaneous, and consequently the amount of information processing can vary. If, as the model assumes, the information processing is productive (i.e., it yields an increasing number of thoughts), and if thoughts mediate attitude change, it follows that amount of processing will be related to the amount of attitude change produced by a communication. Amount of processing is assumed to vary directly with message exposure duration, the key variable investigated in this dissertation. This section deals with the question of how persuasion and amount of information processing, at both the comprehension and appraisal levels, are likely to be related. As part of the related analysis of the effects of message exposure duration, the practical question of how much variation in information processing is produced by variations in message duration is also considered.

Variability in Comprehension, Message Exposure Duration, and Persuasion Effects

Message comprehension is an obvious variable that should be influenced by message exposure duration. Since comprehension is essentially a component of learning, research that has examined the effects of stimulus exposure duration on learning is suggestive about this relationship. Experiments on paired-associate learning have usually found exposure duration to be positively correlated with the
number of trials needed to reach a learning criterion such as errorless recall of the whole list (cf. Cooper & Pantle, 1967; Deese & Hulse, 1967). When the stimulus material is connected meaningful discourse, a similar relationship occurs at very short exposure durations, but duration becomes unrelated to learning trials once it is increased to a certain level (King, 1973a; 1973b). In fact, the exposure time at which learning is not appreciably hampered seems to be a relatively short one. King (1973b), for example, found that a 25-word passage was learned about as well when presented in a total of 15 seconds as when it was presented in 30 seconds. Words were visually presented one-at-a-time in this study, so it is likely that learning would have been unaffected by even a faster presentation time than 15 seconds had whole presentation been used, allowing subjects to read in their usual way.

Learning measures, of course, measure retention in addition to comprehension. Since something can be encoded or comprehended but not well remembered because of lack of rehearsal, the exposure duration short enough to affect comprehension is probably considerably shorter than the corresponding duration necessary for a learning effect. This point is evident from research on serial learning, where it has been found that variation in the presentation rate of sequentially presented verbal stimuli (e.g., nonsense syllables, single words) appreciably affects
long-term retention of the stimuli but has less effect on the ability to recall a stimulus immediately after it is presented (cf. Glanzer & Cunitz, 1966). In the realm of meaningful stimulus material, the considerable research that has been done on the relationship between speech rate and comprehension generally shows that a relatively fast speech rate (corresponding in the present sense to a short exposure duration) is needed to reduce comprehension. Thus, in reviewing the literature on speech rate, Foulke & Sticht (1969) concluded that the effects on comprehension are usually insignificant until a rather rapid speech rate of about 280 words per minute (wpm) is reached (the normal range of speech is roughly from 120 to 180 wpm).

From this brief consideration of relevant research, it appears that decreasing message exposure duration can only be expected to result in decrements in comprehension when duration is decreased rather far below a normal level. Although the amount of reduction necessary to reduce comprehension will be a function of the complexity and difficulty of the material in the message (cf. Chaiken and Eagly, 1976), this conclusion suggests that any effects of exposure duration on persuasion that might occur due to an effect on comprehension are unlikely to occur within the range of durations typical of the everyday world.
When the restriction of message duration does reduce comprehension, a definite effect is predicted from the literature reviewed earlier and from the information processing model: there should be a suppression of attitude change when comprehension is incomplete.

Variability in Appraisal Processing, Message Exposure Duration, and Persuasion Effects

Like comprehension, the appraisal stage of processing must take time. Depth of processing, in general, is believed to be partly dependent on the processing time available (Craik & Lockhart, 1972). One can imagine, in fact, a much wider range (relative to the comprehension stage) over which the amount of appraisal processing can vary, since, in contrast with comprehension, there does not seem to be a necessary "maximum" or "complete" level of appraisal. Presumably, the cognitive activities of the appraisal stage, such as searching memory for topic-relevant knowledge and assessing the logic and relevance (to one's own ideas) of the message information, can go on indefinitely. Realistically, when not otherwise restricted, these activities probably end when the message recipient is satisfied with his or her appraisal. The essential point, though, is that appraisal processing as described by the model, can vary considerably in amount.

Intuitively, it would seem that minor variations in message exposure duration would be more likely to affect
appraisal processing than to affect message comprehension. For example, people often can read something at their maximum reading speed and fully comprehend it. In such a time frame, though, it is unlikely that they can even rehearse what they are reading, much less engage in the mental activities that are believed to characterize appraisal processing. Accordingly, it is possible that amount of appraisal processing varies appreciably with variations in message exposure duration when these durations are within the normal range.

The persuasion literature suggests a number of ways in which amount of appraisal processing should affect persuasion. For example:

1. A few studies have shown that persuasion is positively related to the soundness and plausibility of message arguments (e.g., Johnson & Scileppi, 1969; Petty, Wells, & Brock, 1976). Limits on processing time should reduce the extent to which such message qualities become salient. Consequently, as exposure duration increases, these qualities will have increasing effect on thoughts and, hence, persuasion. The persuasive advantage of a superior message may be lost when it is rapidly presented.

2. The persuasive impact of a message has been shown to be less when recipients are motivated to counterargue with the message (e.g., Brock, 1967). Counterarguing, of course, is one form of appraisal processing, presumably
involving retrieval of unfavorable thoughts in memory and relating them to the message in a critical fashion. With increasing exposure duration, then, persuasion should decrease among message recipients who are motivated to counterargue or for messages that tend to elicit counterarguing.

These brief examples highlight a certain complexity associated with the appraisal process; namely, the fact that appraisal processing can yield thoughts that are either favorable or unfavorable toward the message position. Recall that the information processing model assumes that persuasion is a function of the proportion of message-favorable to message-unfavorable thoughts in the final set of thoughts made salient during processing. This means that the relationship between amount of appraisal processing and persuasion will depend on the evaluative nature of the thoughts generated during processing. If appraisal involves the generation of predominantly unfavorable thoughts, such as counterarguments, the model predicts a negative relationship between amount of appraisal and persuasion—more processing should produce less persuasion. On the other hand, if appraisal processing involves the generation of predominantly favorable thoughts, such as recognition that the message arguments are highly plausible, the opposite expectation holds—persuasion should increase with increased processing. The remainder of this section is devoted to
the documentation and clarification of these derivations from the information processing model, based on a review of relevant research and theory.

Empirical Findings Regarding Amount of Appraisal Processing and Attitude Change

Persuasion Experiments That Have Varied Ability to Process the Message.

Although none have been as direct as message exposure duration, several experimental manipulations that almost certainly affect amount of appraisal processing have been used in published persuasion studies. These manipulations include (a) distracting the message recipient during exposure to the message, (b) varying the speech rate of the communication, and (c) varying the number of presentations of the message.

Distraction. In attempting to discover the effects on persuasion of distracting a person during exposure to a communication, researchers have used such distractions as static on the audio-tape over which the message was heard, panels of flashing lights, requiring subjects to perform arithmetic tasks during the message presentation, and presenting an irrelevant film during the message presentation (cf. Baron, Baron, & Miller, 1973). Such distractions, of course, should limit the message recipient's ability to concentrate fully on the message, and hence should reduce the amount of appraisal processing the recipient engages in.
Among studies in which the distraction has not been so severe as to reduce comprehension, practically all have found that distraction increases persuasion (see the recent reviews of this literature by Baron, Baron & Miller (1973) and Petty (1975)).

Numerous explanations of this distraction effect have been proposed, but Baron et al. found only two to be consonant with the entire body of empirical literature. One of these is the original explanation offered by Festinger & Maccoby (1964), who discovered the effect. Festinger & Maccoby argued that distraction disrupts covert counter-arguing with the message. In terms of the information processing model, this interpretation implies that the predominant appraisal response or thought of the subjects in distraction studies is unfavorable toward the message. Subjects in distraction studies, that is, must devote most of their appraisal processing to counterarguing, and when distraction limits the amount of such processing, there are fewer message-unfavorable thoughts and, hence, opinion change is enhanced. Consistent with the idea that the predominant appraisal-produced thoughts are counterarguments is the fact that distraction studies (with one exception noted below) have invariably used highly counter-attitudinal messages (e.g., messages advocating tuition increases to college students). And in support of the idea that distraction interferes with counterarguing (i.e.,
restricts appraisal processing), several studies (e.g., Osterhouse & Brock, 1970; Petty, Wells, & Brock, 1976) have found that relative to undistracted subjects, those that are distracted list fewer counterarguments or other message-unfavorable thoughts following exposure to the message.

A competing explanation of the distraction effect derives from cognitive dissonance theory (Festinger, 1957). Briefly, this explanation is that distraction increases the effort involved in attending to a communication. To justify this effort, recipients adopt the message's position (cf. Baron et al., 1973; Kiesler & Mathog, 1968).

A recent study by Petty, Wells & Brock (1976) has provided evidence that favors the counterargument disruption interpretation over the effort justification idea. The results of this study are also highly informative about the role of amount of appraisal processing in persuasion. Petty et al. employed a strong manipulation of message quality in attempting to make the thoughts derived from appraisal processing either message-unfavorable, as in previous work on distraction, or message-favorable. Subjects were presented with a taped message containing either logically sound and compelling arguments (difficult-to-counterargue message) or easily refutable, less compelling, and overall illogical arguments (easy-to-counterargue message). Distraction was manipulated by having subjects monitor the frequency and location of flashes of a visual
stimulus ("X") on the screen while they listened to the message, and varying the frequency of such flashes. It was found that, as distraction increased, persuasion increased when the message was easy to counterargue, but decreased when it was difficult to counterargue. The authors' interpretation of this pattern of results is very similar to the ideas derived from the present information processing model. Distraction was seen as inhibiting the "dominant cognitive response" to the message, which essentially refers to the predominant type of thought resulting from appraisal processing. In Petty et al's study, processing of the difficult-to-counterargue message should have resulted in primarily message-favorable thoughts, while processing of the easy-to-counterargue message should have yielded unfavorable thoughts. In both cases, distraction restricted such processing. This interpretation was supported by analyses of the topic-relevant thoughts listed by subjects after the message. The data ruled out the effort explanation since it would predict distraction to increase persuasion regardless of message quality.

Petty et al. obtained their results with both a pro- and a counterattitudinal message. From the information processing perspective, this suggests that message quality can be a stronger determinant of the evaluative outcome of appraisal processing than at least a moderate motivation to counterargue.
Results similar to Petty et al's also have been reported by Regan & Cheng (1973). They found that distraction reduced the persuasiveness of a complex and long, but very convincing message, but increased the persuasiveness of a simple, short, and unconvincing message. The information processing idea that these patterns of data reflect interference with appraisal processing is illustrated in yet another distraction study conducted by Insko, Turnbull & Yandell (1974). These authors examined (a) attitude change and (b) the source (message or recipient generated) and evaluative nature of the post-message thoughts of subjects who either were or were not distracted by performing an arithmetic task while listening to a counterattitudinal message. Compared to non-distracted subjects, distracted subjects (who were told that their primary task was to listen to the message) (a) were more persuaded, (b) listed more message-favorable thoughts derived from the message, and (c) listed fewer counterarguments. In terms of using the message arguments to guide their attitude, distracted subjects apparently got the most out of the message. Insko et al. suggest that this is because distracted subjects had "minimal time for an active thought process such as counterarguing" (p. 520).

**Speech Rate.** A more direct manipulation of appraisal processing time than distraction, of course, is one in which duration of exposure to the same message varies. So
far as this author knows, only one published persuasion study has used such a manipulation. Miller, Maruyama, Beaber, & Valone (1976) varied the speech rate of a communicator that subjects listened to over an audio tape. In two experiments, persuasion was found to be greater, the faster the speech, which varied from slightly below (low-speed) to slightly above (high-speed) the normal speaking range. In one of these experiments, the message was highly counterattitudinal (it argued that drinking coffee is a serious hazard to one's health), and thus, to the extent that fast speech inhibited appraisal processing (i.e., counterarguing), the results support the information processing prediction. The other experiment employed an extremely unfamiliar message topic (the problems with growing vegetables hydroponically). It is unclear, in this case, whether message-favorable or message-unfavorable thoughts were predominant in appraisal processing or, in fact, whether message recipients engaged in much appraisal processing at all. Miller et al. suggested that recipients of such a message relied on speech rate as a cue to source credibility. Since fast talkers often are considered more credible in American culture, there was more persuasion when the speech rate was fast.

Repeated message presentation. The potential amount of appraisal processing of a message obviously should be positively related to the number of times the message is
presented, since each successive presentation provides an opportunity for processing. Several experiments have manipulated the number of message presentations, but, unfortunately, most of these experiments have not been directly concerned with amount of appraisal processing and, as a consequence, have not created optimal conditions for assessing the amount of appraisal/amount of persuasion relationship. Accordingly, the results of these studies conflict—some tend to be contrary to the information processing hypothesis, while others tend to support it.

Among nonsupportive studies, three experiments have found that multiple presentation of a persuasive message produced the same amount of immediate opinion change as a single presentation (Johnson & Watkins, 1971; Ronis, Baumbgardner, Leippe, Cacioppo, and Greenwald, 1977; Wilson & Miller, 1968). The only effect of message repetitions in these studies was to increase the persistence of opinion change, presumably because they led to better learning of the message (Wilson & Miller, 1968) and/or of cognitive reactions to the message (cf. Sawyer, 1979). In each of these experiments, however, it seems unlikely that repetition of the message produced an increase in processing in which thoughts of one evaluative tone (either message-favorable or unfavorable) would be expected to predominate. For instance, Wilson & Miller (1968) gave subjects either one or three audio presentations of a message concerning a
court case (e.g., the defense arguments) either before or after giving a single presentation of an opposing message of equal quality (e.g., the prosecution arguments). Under such circumstances, subjects may have weighed both sides of the case equally, despite hearing one side more often. In Johnson and Watkins' (1971) experiment, a counterattitudinal message arguing against the use of chest X-rays to detect TB was presented either one or five times by audio-tape, and it was found that message comprehension (as reflected in a recall test) was significantly better in the 5 presentations condition. Thus, as the information processing model would suggest, in going from one to five presentations, increased comprehension may have led to more message-favorable thoughts and increased counterarguing (because the message was counterattitudinal) may have led to more message-unfavorable thoughts. If this were so, the net effect of message repetition may have been no change in opinion. Finally, in the Ronis et al. (1977) experiment, written messages about current issues and the statesmanship of past U.S. presidents were presented on a video monitor, and each subject was allowed to read them at his or her own pace. It is quite possible, therefore, that the amount of appraisal processing that subjects were motivated to engage in occurred in full during the initial message presentation. Indeed, Ronis et al. found that the amount of time spent
reading the message repetition was considerably less than the amount of reading time for the initial presentation.

In contrast to these experiments, two recent studies have tested more directly the relationship between multiple message presentations and appraisal processing and their findings generally have been consistent with the information processing model. McCullough & Ostrom (1974) varied number of message presentations on a within-subjects basis by presenting 5 highly similar printed advertisements about a commercial product and taking an attitude measure after each presentation. The ads used 4 identical arguments but varied in the phrasing and ordering of the points. Each was presented for a fixed duration during and after which subjects wrote down their reactions. The dependent variable was "net cognitive response" (cf. Greenwald, 1968), operationalized as the number of positive minus the number of negative thoughts. The effect of message repetition was a significant linear increase in the positiveness of the net cognitive response. With successive repetitions, the number of positive thoughts tended to increase and the number of negative thoughts tended to decrease. These findings indicate that amount of appraisal processing was related to number of message presentations and are consistent with the idea that increases in appraisal processing can have systematic effects on persuasion.
A similar conclusion was reached in a recent experiment by Cacioppo, Petty, and Silvera (1978). In this experiment, subjects heard an audio-taped, highly counterattitudinal message either 1, 3, 5, or 10 times. With increasing presentations, opinion change first increased, then decreased (this curvilinear trend was significant on an attitude measure taken one week following the message and nonsignificant on an immediate attitude post-test). However, it was also found that message comprehension, as indicated by a test of recall, was improved by repeating the message 3 times. Thus, the initial positive repetition/persuasion relationship may have been the result of differences in comprehension. The negative repetition/persuasion relationship observed for later repetitions, though, might well have been due to the effects of repetition on appraisal processing which, it will be recalled, is assumed in the information processing model to follow the comprehension stage.

On the basis of the counterattitudinal position of the message (which advocated to college students either that the driving age be increased to 21 or that alcoholic beverages be banned on and near campus), one would expect that appraisal processing would produce primarily message-unfavorable thoughts such as counterarguments.

Summary and implications. Overall, the results of the studies that have somehow varied amount of appraisal processing support the information processing predictions that
increasing appraisal processing will lead to greater persua-
sion if processing produces thoughts that are predominantly
message-favorable and decreased persuasion if processing
produces thoughts that are predominantly message-unfavorable
in evaluation. In these experiments, certain aspects of the
persuasion situation, such as the strength of the message
arguments or the opposition of recipients to the position
advocated, are considered to have the effect of making the
majority of appraisal-produced thoughts either in one or the
other evaluative direction. The present account of these
effects has assumed implicitly that thoughts of the same
evaluative direction continue to predominate throughout the
duration of appraisal processing. That is, the thought di-
rection that is predominant during initial points in the
appraisal process tends to be predominant at subsequent
points. Some suggestive research findings and theory rele-
vant to this important theoretical point have been reported
in two areas of inquiry, one involving the attitudinal
effects of repeated exposure to noncommunication stimuli,
and the other the attitudinal effects of thinking about an
attitude object.

Repeated Exposure to Valenced Noncommunication Stimuli

Since Zajonc (1968) presented extensive documentation
of the hypothesis that mere exposure to a stimulus makes it
better liked, there has been considerable research on the
effects of repeated stimulus exposure. Consistent with
Zajonc's hypothesis, a large number of studies have found a positive exposure-affect relationship when the stimuli have been novel and/or initially of neutral valence (e.g., Chinese ideographs, artworks, strange people). The reader is referred to Harrison (1977) for a recent review of this research and theoretical interpretations. Of special interest in the present context are those repeated exposure studies that have used stimuli with meaning or affective valence prior to exposure. A number of these studies have observed polarization effects such that, with increasing exposure, initially positively toned stimuli become more positively rated while initially negatively toned stimuli become more negatively rated. To illustrate, in an experiment by Brickman, Redfeld, Harrison & Crandell (1972), subjects were exposed 1, 2, 5, or 10 additional times to abstract paintings that they had indicated either like or dislike for after an initial exposure. With increasing exposure, initially liked paintings became significantly more liked and initially disliked paintings became non-significantly more disliked. Similar effects were found in two experiments by Grush (1976) when the stimuli were positively (e.g., bluejay) and negatively (e.g., depravity) toned English words, and by Perlman and Oskamp (1971) when the stimuli were photographed men about whom positive or negative attributions could be made on the basis of the roles the men portrayed in the photographs.
To investigate the process underlying these polarization effects, Grush (1976), in one of his experiments, had subjects generate associations to the positive and negative stimulus words and then evaluate the associations. The summed evaluations of the associations were found to closely parallel the word evaluations—with increasing exposure they became increasingly positive for positive words and increasingly negative for negative words. Grush offered an attitude formation theory to explain these results. According to this theory, with repeated exposure, people make an increasing number of mental associations to a stimulus, the evaluative nature of which tend to be consistent with already existing associations. Following Fishbein's (1967) summative formula of attitudes, attitude toward the stimulus is assumed to be a function of the final number of associations multiplied by their evaluative meaning. While this theory presently does not offer an explanation of all exposure effects (cf. Harrison, 1977; Sawyer, 1979), it does provide an appealing account of the cognitive effects of repeated exposure when the stimuli are initially valenced and the valence is salient during the exposures (cf. Zajonc, Markus, and Wilson, 1974).

For present purposes, it can be noted that, as a description of an appraisal process through which one forms an attitude about a noncommunication stimulus, the attitude formation theory is conceptually similar to the information
processing description of the appraisal process in persuasion. Like that analysis, the attitude formation theory describes a generative, thought (or association)-producing process. Most importantly, this theory and the supporting repeated exposure research are consistent with the theoretical position presently under scrutiny; namely, that the thoughts produced at successive levels of appraisal processing in persuasion tend to be evaluatively consistent. If generated associations tend to be consistent with existing associations, the thoughts or associations generated at any given point of appraisal processing should tend to be consistent with the thoughts generated at preceding points.

**Mere Thought and Attitude Toward Objects and Issues**

An additional basis for the above conclusion has been provided in recent research on the attitudinal effects of merely thinking about an attitude object. In several experiments, Tesser and his colleagues (cf. Tesser & Leone, 1977) have found that mere thought about an object produces a polarization of attitude similar to that caused by repeated exposure to valenced stimuli. That is, thinking about an object when it is not actually present makes a person's initial evaluation of the object more extreme. In one pair of experiments, for example, Tesser & Conlee (1975) instructed subjects to think about a socio-political issue for intervals ranging from 30 to 180 seconds after they had indicated either agreement or disagreement with a
single-sentence statement concerning the issue. They were then asked to give their attitude a second time. The major finding of both experiments was that, regardless of initial attitude direction, the probability of attitude polarization increased monotonically as a function of thought duration. In a third experiment reported in the same paper, the same monotonic effect of thought was obtained when the rated stimuli were news photos and the time spent thinking about the photos (while they were physically absent) was a total of either 0, 28, or 60 seconds.

Within an experimental paradigm similar to Tesser & Conlee's, the polarization effect also has been obtained with such attitude objects as people (Sadler & Tesser, 1973), artworks (Tesser & Leone, 1977), and football strategies (Tesser & Leone, 1977). The effect, however, may be limited to the case of change in already existing attitudes, since Simpson & Ostrom (1974) were unable to find differences in first impressions formed from written person descriptions when subjects were asked to make either rapid, snap judgments or slower, thoughtful judgments.

Tesser & Leone (1977) have interpreted the polarization effect of thought in terms of a model of thought generation that is based on the assumption of evaluative consistency. According to this model, thinking about something involves tendencies to (a) generate cognitions about the object that are evaluatively consistent with one's
attitude and (b) make existing cognitions more consistent. These tendencies exist, according to Tesser & Leone, because the selection of beliefs and cognitions from memory and experience is under the control of cognitive schemas, or naive theories about attitude objects that render only some of a particular domain of cognitions salient. One's cognitive schema about a particular object, that is, directs thought toward cognitions that would be predicted from the evaluative nature of the schema. If the person has a schema that describes some initial properties of the object as evaluatively positive, the cognitions added through thought will also be favorable for the most part. The opposite effect occurs if the schema describes the object negatively.

The tendency toward generation of evaluatively consistent cognitions has been observed by Sadler & Tesser (1973). These authors found that subjects told to think about a liked or disliked person generated a greater number of cognitions consistent with their initial feelings than did subjects who were distracted from thinking about the person. The number of generated inconsistent cognitions, on the other hand, was unaffected by the opportunity for thought. Evidence of the tendency to make existing cognitions more consistent with attitude has been found in two studies that varied the opportunity for thought. Tesser & Cowan (1977) found greater thought-produced polarization in ratings of a stimulus person when inconsistent information
was ambiguous and easy to reinterpret than when it was un-
ambiguous and difficult to reinterpret. This same study
also found that thought facilitated change in the evaluation
of the inconsistent information itself in the direction of
subject's initial attitude. In an experiment by Watts &
Holt (1970), a ten-minute interval following a persuasive
message was found to produce a significant change toward
consistency in beliefs that were logically related to the
belief that had been the target of persuasion.

Still another finding that lends credence to Tesser &
Leone's thought generation model comes from research on the
effects of forewarning of an impending counterattitudinal
communication. In an experiment by Freedman & Sears (1965),
high school students were told that they would hear a speech
that strongly opposed teenage driving and then heard the
speech either 0, 2, or 10 minutes later. It was found that
the longer the delay between forewarning and speech, the
less the persuasive impact of the speech. This effect,
later replicated by Hass & Grady (1975) and Petty & Cacioppo
(1977), suggests that attitude-consistent cognitions were
generated in anticipation of the counterattitudinal appeal,
that such cognitions bolstered resistance to persuasion,
and, most importantly for present purposes, that such cog-
nitions became more numerous and/or salient over time.
Conclusion: The Principle of Evaluative Consistency

In a very similar fashion, the data and interpretations of the polarizing effects of thought support the same conclusion as data and theory concerning repeated stimulus exposure; namely that cognitive processing (or thought) about affect-laden stimuli is characterized by evaluative consistency. Such a conclusion, of course, is not new. Consistency theories (e.g., Festinger, 1957; Heider, 1958; McGuire, 1960; Newcomb, 1959; Osgood & Tannenbaum, 1955; Rosenberg & Abelson, 1960) hold as a central assumption that people seek a state of balance and consistency in their cognitions, feelings, and behaviors. And the achievement of consistency has been recognized as requiring some time devoted to cognitive processing (McGuire, 1960).

A straightforward generalization from the preceding review of repeated exposure and mere thought research is the assumption that appraisal processing in persuasion, which is essentially a thought process, also is characterized by evaluative consistency of generated cognitions. This assumption, it will be recalled, also is suggested by persuasion experiments that have varied the amount of appraisal processing. Just as an initial feeling about a noncommunication stimulus directs further thought about that stimulus, the appraisal process in persuasion should be guided by a cognitive schema, such as described by Tesser & Leone (1977), that works to make thoughts of one
evaluative nature the dominant appraisal response. Given initially positive appraisal, the dominant or most likely outcome of further appraisal should be additional positive or message-favorable thoughts. Similarly, initially negative appraisal should continue to be negative. This assumption of evaluative consistency figures prominently in the hypotheses that follow.

A Hypothetical Relationship Between Persuasion and Amount of Information Processing

From the preceding discussions of the information encoding stages of comprehension and appraisal, a hypothetical relationship between amount of information processing and persuasion can now be stated that covers the range of processing including both of these stages. As dictated by the information-processing model, the crucial determinant of this relationship is the evaluative nature of the thoughts produced or made salient at successive levels of processing. In the initial processing stage of comprehension, the thoughts that become salient derive from the message. Since the message, by definition, is designed to persuade, these thoughts should be uniformly favorable. It follows that (a) if encoding processing is restricted to comprehension, positive attitude change should occur, and (b) if amount of such processing is less than that necessary for full comprehension, attitude change should be
correspondingly lower. Thus, consistent with research reviewed earlier, persuasion should increase as amount of processing increases from none to full comprehension.

If processing proceeds to the appraisal stage, the additional thoughts that will occur may be either message-favorable or unfavorable. As was argued in the preceding section, the effect of amount of processing at this stage should depend on the dominant appraisal response, defined as the type of thought, favorable or unfavorable, that occurs most frequently during processing. According to the principle of evaluative consistency, the dominant appraisal response should correspond to the evaluative tone of the initial set of appraisal-produced thoughts and should remain the same throughout the duration of appraisal processing. Given the assumption that attitude is based on the overall evaluative nature of the pool of thoughts that result from processing, it follows that, as processing continues beyond comprehension, persuasion will increase from its post-comprehension level when the dominant appraisal response consists of message-favorable thoughts. In this case, more favorable than unfavorable thoughts are being added to the favorable thoughts introduced via comprehension, and the overall favorability of appraisal is therefore increasing. Similarly when the dominant appraisal response is unfavorable thoughts, persuasion will decrease as appraisal processing increases, since here, more unfavorable than
favorable thoughts are being added, and overall appraisal is becoming increasingly unfavorable. This hypothesized relationship between persuasion and amount of appraisal processing is portrayed in Panels A and B of Figure 1. Panel C of Figure 1 presents resultant persuasion over the full range of processing, including comprehension and appraisal, as a function of the evaluative nature of the dominant appraisal response.

Determinants of the dominant appraisal response. The most important variable involved in the hypothesized relationship between amount of processing and persuasion is the dominant appraisal response, since at the post-comprehension level of processing, it is this variable that determines whether increases in processing will result in increases or decreases in persuasion. Accordingly, it is important to consider what determines the evaluative nature of the dominant appraisal response. The preceding review of empirical literature conveys the impression that characteristics of both the message recipient and the persuasive communication can be influential. In the former case, recall that Tesser & Leone's (1977) thought generation model predicts that a person's pre-thought evaluative stance toward an object or issue determines initial and subsequent appraisal. Following this model, then, the recipient's pre-message attitude relative to the message position would be expected to
Figure 1. Hypothetical relationships between amount of information processing and persuasion. (A and B) Relationship between amount of processing, thoughts, and persuasion when the dominant appraisal response is favorable thoughts or unfavorable thoughts; (C) Relationship between amount of processing and persuasion over the full range of encoding processing.
determine the dominant appraisal response: if the message is counterattitudinal, the response should be unfavorable; if the message is proattitudinal, it should be favorable.

Features of the message, though, also are apt to exert influence. As was indicated in Petty, Wells, & Brock's (1976) experiments on distraction, the quality of message arguments can strongly affect attitude change and the evaluative nature of generated thoughts. An initial inability to refute arguments might direct memory, for example, to message-supporting ideas, while recognition that arguments are illogical might encourage further counterarguments. Similarly, knowledge of the message source's credibility might affect appraisal, by engendering counterarguing if the source has low credibility, or suppressing counterarguing if the source is an expert (cf. Gillig & Greenwald, 1975).

In any given persuasion situation, it is likely that both recipient and message characteristics will each have some effect on the dominant appraisal response. As a general rule, however, it would seem that message characteristics should be the major determinant to the extent that the recipient (a) has a neutral pre-message opinion or is undecided and (b) is not highly involved in the issue. In the case of opinion neutrality or indecision, of course, there is no existing affect-laden cognitive schema for thinking about the message, and information from the message should have great weight in the formation of such a schema.
With regard to involvement, there is considerable evidence that degree of involvement with an attitudinal issue, characterized as personal concern with the issue or commitment to a specific position (Insko, 1967), is negatively related to persuasion (cf. Freedman, 1964; Sherif & Hovland, 1961). That recipient characteristics such as initial opinion will determine the dominant appraisal response under conditions of high involvement whereas message characteristics are primary determinants under conditions of low involvement, is evidenced in experiments by Johnson & Scileppi (1969) and Hass (1972). Both these studies found that a source credibility manipulation had a strong effect on attitude change when involvement was low, but no effect when involvement was high. These considerations suggest that, in circumstances where it is known how involved and opinionated the audience is, it should be possible to predict the dominant appraisal response from either initial recipient opinion or message characteristics.

**Hypotheses Concerning Message Exposure Duration**

In the experiments reported below, the theoretical model that has been developed in this introductory chapter was tested by examining the effects of message exposure duration on measures of persuasion and appraisal. As a direct manipulation of the time available for information processing, message exposure duration, as suggested earlier, should strongly affect the amount of processing of a
persuasive message. On the basis of the theoretical model, the following predictions were made about the effects of exposure duration on persuasion:

1. As exposure duration increases from zero (no exposure) to the minimum level at which comprehension is full, persuasion will increase regardless of the dominant appraisal response.

2. If the dominant appraisal response is favorable toward the message position, as exposure duration increases from the minimum level at which comprehension is full to a recipient-determined level, persuasion will increase.

3. If the dominant appraisal response is unfavorable, as exposure duration increases over the same range as in Hypothesis 2, persuasion will decrease.

The model, of course, also makes specific predictions about the resultant degree of favorability of appraisal (i.e., the overall favorability of the thoughts resulting from processing), which the model identifies as the essential mediating variable on which amount of persuasion depends. These predictions are:

4. As exposure duration increases from zero to the minimum level at which comprehension is full, appraisal will become more favorable toward the message position, regardless of the dominant appraisal response.

5. If the dominant appraisal response is favorable, as exposure duration increases from the minimum level at
which comprehension is full to a recipient-determined level, appraisal will become more message-favorable.

6. If the appraisal response is unfavorable, as exposure duration increases over the same range as in Hypothesis 5, appraisal will become less message-favorable.

The series of experiments reported in this dissertation examined the effects of message exposure duration by manipulating the length of time during which a subject views a printed persuasive message. To accomplish this manipulation, the experiments were carried out in a computer-based procedure for studying persuasion recently developed by Greenwald and his colleagues (Ronis, Baumgardner, Leippe, Cacioppo, & Greenwald, 1977; Baumgardner, Leippe, Ronis, & Greenwald, 1978). In each of the experiments, subjects sat before a video monitor and viewed a computer-controlled presentation of persuasive communications, presented for varying lengths of time, interspersed with opinion and other dependent measures. By manipulating the duration of presentation of written messages that were of a constant word length, the reading pace necessary to read and understand an entire message was systematically varied. In turn, by informing subjects of the duration of messages before their presentation, it was expected that subjects would adopt the necessary paces and achieve differential amounts of comprehension and appraisal over the message duration conditions.
The message durations used ranged from so short that full comprehension was impossible, to an intermediate level that was expected to essentially force subjects to read solely for comprehension, and, finally, to longer time spans that permitted a reading pace sufficient to accomplish both comprehension and some appraisal.

The expectation that reading pace in the intermediate message exposure duration range would be altered to give priority to comprehension of the full message at the expense of most appraisal is important in light of the possibility that appraisal processing can follow comprehension of any single argument or proposition. To fully test the hypotheses, a comprehension-but-little-appraisal condition is necessary. Fortunately, this expectation is consistent with a familiar notion in the study of reading -- that readers can read with different intentions and that what is derived from the reading (for example, what is recalled) will vary with intentions or reading set (cf., Kintsch & Van Dijk, 1978). Recently, Greenwald (1979) has applied a similar idea to the reception of persuasive material. Greenwald points out that, depending on intentions, a message recipient's information processing activities may range from only passing attention or simple comprehension to careful appraisal (this processing set notion will be discussed in more detail in Chapter 2).
CHAPTER 2
EXPERIMENT 1

Experiment 1 was designed to provide an initial assessment of the effects of message exposure duration on (1) opinion change and (2) amount of information processing in the standard computer-based procedure. The persuasive messages employed have been found to be highly persuasive (cf. Baumgardner et al., 1978), suggesting that they elicit predominantly favorable dominant appraisal responses. Accordingly, it was expected that persuasion in Experiment 1 would be a positive linear function of message exposure duration.

Method

Subjects

Seventy-six male and female introductory psychology students at Ohio State University participated to partially fulfill a course requirement. Due to their performance on a reading speed test administered at the outset of the experiment, 3 subjects' data were discarded: 2 of these subjects were judged to read too slowly to permit effective manipulation of message exposure duration and 1 was an accomplished speed reader. A fourth subject was eliminated because she failed to follow instructions.
Overview

Subjects proceeded individually through a computer-controlled video presentation of printed material during which they encountered, in succession: (a) instructions; (b) a reading-speed test that measured a subject's maximum reading speed for prototypical persuasive messages; (c) opinion pretests; (d) a series of persuasive messages, each presented for one of five manipulated duration intervals, interspersed with posttest opinion questions; (e) an unexpected retention test for a subset of the messages; and (f) debriefing.

Equipment. The equipment used for this experiment (as well as the remaining experiments of this dissertation) included (a) a minicomputer, (b) a mass storage device for libraries of communications and dependent measures, (c) four video display monitors located at satellite subject stations, (d) response keyboards on which the subject at each station could provide numerical responses or other information to the computer, and (e) an experimenter's console used to initiate and monitor operation of the experiment.

Persuasive materials. The persuasive messages dealt with 20 different policy issues (henceforth called topics), selected on the basis of earlier research (cf. Baumgardner et al., 1978). They are topics for which college students tend to have (a) at least moderate interest, (b) little specific knowledge, (c) relatively homogeneous opinions,
and (d) the belief that opposed views on the topic do not reflect fundamentally dissimilar values. Persuasive messages consisted of four, four-line persuasive arguments, all arguing for one side of the policy issue. Previous research in which these four-argument messages were presented for subject-determined durations has shown that the messages are quite persuasive, producing an average of 1.7 scale units change on a 15-point scale. Examples of the persuasive messages are presented in Appendix A, along with a list of the 20 topics.

Manipulation of message exposure duration. Because people differ rather widely in their reading speed, message exposure duration was manipulated on the basis of an estimate of each subject's reading speed. After the initial instructions, each subject was asked to read two messages (on two policy issues reserved for this function that were not used in the experimental design) as rapidly as possible while achieving comprehension. The computer recorded the time elapsing between initial presentation of each message and the moment at which the subject pressed a button on a response keyboard indicating that he/she had completed reading the message. The average reading time for the two messages defined a quantity \( T_{\text{min}} \) that was taken as the minimum time required by the subject for full comprehension. Four levels of fixed exposure duration were used in the subsequent procedure: \( .6(T_{\text{min}}) \), \( T_{\text{min}} \), \( 1.4(T_{\text{min}}) \), and
These proportions were chosen on the basis of a previous pilot investigation reported in Appendix F, the data of which indicated that subject self-paced reading times averaged about $1.4(T_{\text{min}})$. Thus, the four fixed duration levels were, respectively, too short for full comprehension, just sufficient for full comprehension, the expected self-paced duration, and longer than self-paced duration.

Previous research (Ronis et al., 1977, Experiments 4 and 5) has found that self-paced reading time reliably decreases as a function of ordinal position of messages within a session. In recognition of this reliable effect, message exposure durations were decreased systematically during the experimental session according to the slope of the regression line that was found to relate ordinal position and reading time in the pilot study (just alluded to) reported in Appendix F.

**Dependent Measures**

**Opinion.** Opinion responses were given on 15-point scales which were posed on a monitor display page in the following (representative) format:
Should college athletic programs be abandoned?

A Should not be abandoned

B Should be abandoned

Express your opinion on the above topic using a number on this scale.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
AGREE WITH POSITION A UNCERTAIN AGREE WITH POSITION B
STRONGLY MILDLY MILDLY STRONGLY

Repetition reading time measure of information processing. An unobtrusive assessment of amount of information processing was made by repeating a subset of the persuasive messages 10 "units" after original presentation (where a "unit" refers to one monitor display page -- containing either a message, an opinion item, or other printed information). Exposure duration (reading time) to these repeated messages was under the subject's control and was recorded unobtrusively by the computer. Repetition reading time was taken as an indication of amount of information processing of the initial message on the assumption that it is negatively related to how much comprehension and appraisal of the message occurred during initial reading. Some support for this assumption is provided by Ronis et al. (1977, Experiment 5), who found that subjects spent less time reading a message on its second exposure, and still less on a third exposure.
Retention of message content. To measure comprehension, an unexpected retention test was administered at the end of the experimental session for a second subset of the messages. On this test, a subject was shown four one-line phrases, each of which described the non-evaluative content of a persuasive argument on a message topic (e.g., "college athletic programs and academic standards" was a descriptive phrase pertaining to the issue "Should college athletics be abandoned?"). Two of the four phrases described the content of actual arguments presented in the earlier message, and the subject was asked to indicate which two. A score of 2 was given if two argument descriptions were correctly identified, a score of 1 if one was correctly identified, and a score of 0 if none was correctly identified. An example of such retention questions is given in Appendix A.

The measurement delay intervals from message to retention test varied from treatment to treatment within groups of subjects receiving the same sequence of messages and measures (see below). These intervals were closely equated on an experimentwide basis, however, by varying the message and test positions in a particular treatment over different groups of subjects. The average measurement delay interval was about 25 display page units. A similar procedure was used in later experiments with the same resulting average measurement delay.
Design

A pretest-posttest design was employed in which a pretest opinion measure was obtained on each treatment topic before any messages were presented. The basic design was a 4 x 2 x 2 within-subjects factorial, in which the factors were message exposure duration (as described above), opinion measurement delay (0 or 10 delay units), and blocks within sessions (first or second). These factors will be referred to as message duration, measurement delay, and block, respectively. The messages in the 0-units measurement delay treatments (total of 8 treatments) were repeated as an unobtrusive assessment of information processing, and the messages in the 10-units measurement delay treatments of the second block (total of 4 treatments) were targets for the unexpected end-of-session retention tests. Additionally, there were two self-paced message control conditions, in which message duration was untimed and under the subject's control.

Four between-subjects replications of this design, to which 18 subjects each were randomly assigned, were undertaken (total N = 72). These replications were the orthogonal combinations of two control factors: direction-of-persuasion, in which one or the other of two opposing sides of the policy-issue topics was argued in the message; and treatment sequence, in which one or the other of two orders of treatment presentation was encountered.
Topic counterbalancing. The computer implemented a topic counterbalancing procedure in which, in each replication group, each of 18 topics served once as the message topic in each treatment.

Procedure

After arriving for the experiment, subjects were seated at individual cubicles (about 2 m. square) at a table upon which were a video monitor and a small keyboard. Four such cubicles were available at any one time, allowing for 4 subjects to be run simultaneously.

After brief orienting instructions by the experimenter, subjects, at their own pace, read through initial instructions on the video monitor. These instructions, provided in entirety in Appendix B, described the experiment as concerned with responses to short messages of the sort often encountered in the mass media, and asked subjects to deal with the messages as they would deal with such messages in the mass media. The instructions then introduced the maximum reading speed test. Subjects were requested to read two "sample" messages at the fastest rate at which they could fully understand the message meaning, so that the experimenters could "obtain an idea of the maximum speed with which written communications can be read". Subjects then read two successively presented 4-paragraph messages, and the computer recorded the time in seconds between appearance of each message and the time at which subjects pressed
a button on the response keyboard to erase the display screen. After reading both messages in this fashion, a subject's average reading time was displayed on the monitor.

The next phase of instructions gave the details of the presentation of messages and opinion measures that would soon be encountered. Subjects were told that most messages would be presented for fixed durations ranging from too short for reading in entirety to considerably longer than necessary for full reading, that some messages would be repeated, and that they would be told of a message's duration just previous to receiving the message. (No mention was made of the relation between message exposure durations and the completed reading time test.) In addition, subjects were given practice with the procedure for entering opinion responses.

The data collection sequence began with presentation (in random order) of opinion pretests on the 18 topics for which subjects would later see messages. The sequence of messages, message repetitions, and posttest opinion questions then followed. This included a total of 18 different messages, 8 of which were repeated, corresponding to the within-subjects design of the experiment. Immediately after (0 units delay) each message repetition, subjects were given a second opinion posttest on that message topic. After subjects had completed this sequence, a display page appeared instructing them that the message presentation
sequence was over and that they would now perform a final task. Instructions regarding the unexpected end-of-session retention questions were then given, followed by retention questions on four messages (one at each level of duration). After they had completed all 4 retention questions, subjects were given printed debriefing information over the video monitor and then instructed to find the experimenter, who answered questions and dismissed them.

Note on Analysis and Reporting of Replication Factors Effects

The two between-subjects control factors, treatment sequence and direction-of-persuasion, were included in the design strictly for purposes of replication. That is, these factors were varied over groups of subjects in order to determine whether the effects of theoretically interesting variables were independent of particular combinations of treatment presentations. Similar replication factors also are included in later experiments. Although the replication factors were not expected to interact with treatment effects, the numerous interaction tests created by crossing the replication factors with within-subjects treatment factors and combinations make it very likely that one or more such interactions will be significant by chance (i.e., a Type I error). For example, in analyzing only the opinion change data of Experiment 1, the probability that there will be at least one Type I error at \( \alpha = .05 \) among
the 21 interaction tests involving at least one of the two replication factors and at least one of the three theoretically relevant within-subjects factors is \( 1 - (1 - .05)^{21} \) or \(.66\). In light of this high probability of a Type I error, a consistent strategy was employed throughout this dissertation in the analysis and reporting of replication effects. As a test of the overall effect of a replication factor on a single dependent measure, a multivariate test of the interaction of that factor with the within-subjects treatment effects was performed (and reported in a table in Appendix G where the multivariate tests of replication effects for all experiments are listed). Nonsignificance of this test was taken as an indication that the replication factor produced no more than chance effects. Unless such a multivariate test was significant and/or standard analysis of variance revealed an interaction in which a replication factor qualified an hypothesis-relevant treatment effect, replication factors are not discussed in reporting results.

**Results**

Manipulation of Message Exposure Duration

The estimates of \( T_{\text{min}} \) reading time (obtained for each subject by averaging their reading times for two sample messages -- see Method section) ranged from 22 seconds to 74 seconds among subjects whose data were analyzed. The
mean $T_{min}$ estimate was 39.68 seconds and the standard deviation was 10.52 seconds. There were no differences in mean $T_{min}$ estimate across the four between-subjects replications (main effects and interaction $F$'s < 1). As a consequence of the $T_{min}$ estimates and the function by which message exposure durations were systematically decreased during the course of the message sequence, the resulting average lengths of the four levels of message exposure duration were: $0.6(T_{min}) = 18.95$ sec.; $T_{min} = 35.24$ sec.; $1.4(T_{min}) = 50.75$ sec.; and $1.8(T_{min}) = 65.54$ sec.

The effectiveness of the $T_{min}$ measure as an index of reading speed was checked by examining the correlations of $T_{min}$ estimates with (a) message reading times in the self-paced message control conditions and (b) reading times for message repetitions. Correlations of $+.52$ ($p < .001$) and $+.22$ ($p < .06$) were observed between $T_{min}$ estimate and reading time in the first and second self-paced conditions, respectively. These positive correlations indicate that the $T_{min}$ measure reflects consistent individual differences in subject reading speeds. The correlations between $T_{min}$ estimate and message repetition reading times were computed to examine the possibility that the longer $T_{min}$ estimates represent not only slower comprehension (as intended), but also a tendency for some subjects to have devoted time to appraisal of the test messages. If this was the case, $T_{min}$ overall, would be an invalid estimate of minimum
comprehensible reading time and would be negatively correlated with repetition reading time. Subjects with longer $T_{\text{min}}$'s would have had greater opportunities for appraisal during exposure to initial (fixed duration) message presentations and so would have needed less time for further appraisal of repetitions. Such negative correlations were not found. Over the eight treatments in which message repetitions occurred, the correlations between $T_{\text{min}}$ and repetition reading time ranged from -.06 to +.25 and averaged to +.08. Only one of the correlations (+.25) was significant at the .05 level. These predominantly nil correlations argue against the notion that many of the longer $T_{\text{min}}$ estimates reflect considerable appraisal processing time. (However, one might question why the correlations were not stronger in the positive direction in a fashion similar to the correlations between $T_{\text{min}}$ and reading times of self-paced first presentations (self-paced control messages). One explanation may be that time necessary for comprehension and time necessary for appraisal processing are uncorrelated. Slow comprehenders, for example, may not necessarily devote proportionately longer time periods to appraisal than do fast comprehenders.)

Further information on the effectiveness of the manipulation of message exposure duration will be encountered in the report and discussion of the repetition reading time results given below.
Opinion Change

**Overall persuasive impact.** Comparison of pretest opinions with posttest opinions revealed that the 4-argument messages produced highly significant opinion change (overall mean difference between posttests and pretests in the factorial treatments: 1.82 scale units, \( F(1,68) = 116.90, p < .001 \)).

**Message duration.** The dependent variable used to analyze factorial treatment effects was a residual change score \( c = PO - b_{PO,PR} \), where \( c \) is the residual change score, \( PO \) is opinion posttest score, \( PR \) is opinion pretest score, and \( b \) is the pretest-posttest regression coefficient. Residual change scores (to be referred to as pretest-adjusted posttests) were thus obtained through a multiple regression analysis in which all posttests were predicted from all pretests. The residual change score essentially denotes whether a person changed more or less than expected on the basis of the overall pretest-posttest regression equation (cf. Cronbach & Furby, 1970; and for a recent example of the use of residual change as an attitude change measure, see Stephan & Rosenfield, 1978).

A Message Duration x Measurement Delay x Block analysis of variance on the pretest-adjusted posttests revealed only one significant effect, a main effect for message duration \( (F(3,66) = 3.20, p < .029) \). This effect was comprised of significant linear \( (F(1,68) = 5.89, p < .018) \)
and quadratic ($F(1,68) = 5.13, p < .027$) trend components. 
Figure 2 presents pretest-adjusted posttest means as a function of message duration. As can be seen, rather than the expected monotonic increase in opinion change across duration levels, there was a substantial increase between the shortest (sub-comprehension) duration condition and the $T_{\text{min}}$ condition, but only a slight increase between $T_{\text{min}}$ and $1.4(T_{\text{min}})$, and then a slight decrease between $1.4(T_{\text{min}})$ and the longest duration condition ($1.8(T_{\text{min}})$).

Information about the effects of message exposure duration can also be obtained by examining the additional opinion change produced by the self-paced message repetitions that followed the 0-unit measurement delay, fixed-duration, treatment messages. Figure 3 presents mean opinion posttest scores in these conditions as a function of message duration (of the initial presentation) and posttest timing (after the fixed duration first presentation or after the repetition). A $4 \times 2$ analysis of variance on these means revealed a significant effect for posttest timing ($F(1,68) = 6.92, p < .011$) and a marginally significant Timing x Message Duration interaction ($F(3,66) = 2.54, p < .064$) that was comprised of a significant Timing x Linear Trend of Message Duration component ($F(1,68) = 5.67, p < .021$). As Figure 3 indicates, the overall effect of the message repetition (i.e., the posttest timing main effect) was to increase persuasion.
Figure 2. Mean estimated opinion change in Experiment 1 as a function of message duration (defined as a proportion of minimum comprehensible reading time ($T_{min}$)). Each point is the sum of the mean pretest-adjusted posttest score at the particular message duration level added to the average pretest-to-posttest opinion change over all treatments ($= 1.82$ scale units). Each mean is based on 288 observations (4 per subject).
Figure 3. Opinion posttest means in those conditions of Experiment 1 where an opinion response was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message. Opinion means are shown for both posttests as a function of the duration of the initial message presentation. High numbers reflect greater agreement with the message (on a 15-point scale). Each point is based on 144 observations (2 per subject).
However, a reliable increase only occurred when the message exposure duration of the initial presentation was \(0.6(T_{\text{min}})\) or \(T_{\text{min}}\) (univariate \(F\)'s(1,68) = 4.64 and 5.29, \(p\)'s < .035 and .024, for the comparison of the two posttests in these conditions, respectively). The additional exposure time afforded by the repetition leads to additional message impact if the duration of the first message presentation was insufficient for full comprehension and if it was just sufficient.

**Self-paced message treatments.** The mean difference between pretests and posttests in the self-paced message control treatments was 1.68 units. Comparison of opinion posttests in the self-paced message control treatments with the opinion posttests at each level of fixed message duration revealed no significant differences (all \(p\)'s > .19).

**Repetition Reading Time**

The amount of time spent reading self-paced message repetitions was analyzed by an analysis of variance in which the factors were message duration (of initial presentation), block, and the two between-subjects control factors. This analysis revealed a highly significant main effect for message duration (\(F(3,66) = 19.70, p < .001\)), that was almost entirely contained in the linear component (\(F(1,68) = 51.90, p < .001\) for linear trend vs. \(F\)'s < 1 for quadratic and cubic trend components). This effect is
displayed in Figure 4, where it can be seen that repetition reading time decreased linearly as the duration of initial message presentation increased.

The analysis of repetition reading times also revealed some additional effects that appear to be primarily the result of methodological artifacts rather than meaningful differences in information processing of the initial message. These effects were a significant main effect for block ($F(1,68) = 60.37, p < .001$) characterized by longer reading times in the first block, and three significant interactions: Duration $\times$ Block ($F(3,66) = 3.82, p < .014$); Treatment Sequence $\times$ Block ($F(3,66) = 9.06, p < .001$); and Duration $\times$ Sequence $\times$ Block ($F(3,66) = 13.19, p < .001$). Each of these effects appears to be due, more or less, to (a) a tendency for subjects to spend relatively more time reading the first few repetitions in a sequence, regardless of the duration of the initial message presentation, and (b) a tendency for subjects to spend progressively less time reading repetitions as the session progressed, again regardless of the initial presentation duration. This pattern can be seen in Figure 5, where repetition reading time is plotted as a function of message duration, block, and treatment sequence, and the sequential position of the message repetition, relative to the others, is given in parentheses. This pattern is similar to the reading time patterns observed by Ronis et al. (see Method section
Figure 4. Mean time (in seconds) spent reading message repetitions in Experiment 1 as a function of duration of initial message presentation. Each point based on 144 observations (2 per subject).
Figure 5. Mean time (in seconds) spent reading message repetitions in Experiment 1 as a function of duration of initial message presentation, block (blk), and treatment sequence (seq). The sequential position of the repetition relative to the other repetitions in the same treatment sequence is given in parentheses beside the appropriate point. Each point is based on 36 observations (1 per subject within a treatment sequence replication condition).
above under **Manipulation of Message Exposure Duration**) and is probably due to practice effects, fatigue, and/or other factors that are not of immediate substantive concern.

In order to confirm that the message duration main effect was not somehow produced artifactually by the positioning of message repetitions in the two treatment sequences, a multiple regression analysis was performed in which the linear effect of message duration was assessed after the effects of position-of-repetition-in-sequence and the treatment sequence and direction-of-persuasion replication factors were removed. From this analysis, the linear effect of message duration emerged as still highly significant ($F(1,493) = 69.42, p < .001$). The effect of position (with all other effects removed), incidentally, was also highly significant ($F(1,493) = 26.23, p < .001$).

**Retention of Message Content**

Figure 6 presents the unexpected end-of-session content retention test results. An analysis of variance on the retention scores revealed a significant effect for message duration ($F(3,66) = 4.70, p < .005$). As expected, there was reduced recognition of message paragraph descriptions at the shortest duration level, and about equivalent recognition in the three longer duration conditions (both the linear ($F(1,68) = 11.69, p < .001$) and the quadratic ($F(1,68) = 4.10, p < .050$) trend components of message duration were significant).
Figure 6. Message content memory in Experiment 1: Mean number (maximum = 2) of message argument descriptions correctly identified as a function of message duration. Each point is based on 72 observations (1 per subject).
Correlational Analyses

Table 1 presents the within-cell correlations of pretest-adjusted posttests with repetition reading times and message content retention scores for the experimental conditions in which these latter measures were obtained. Consistent with research findings concerning correlations of opinion change with message learning measures reviewed in the introduction, the correlations were in all cases low and nonsignificant.

Discussion

Experiment 1 found that both opinion change and retention of message content were decreased when message exposure duration was decreased to less than the minimum necessary for full reading of the message. Opinion change and content retention, however, did not increase substantially when duration was increased beyond the necessary minimum. By contrast, repetition reading time, which was assumed to be inversely related to the amount of information processing occurring on the initial presentation of a message, decreased linearly as message exposure duration increased.

The pattern of retention and repetition reading time data strongly suggests that the manipulation of message exposure duration had its intended effects on message comprehension and appraisal processing. Whereas the content retention results indicate that comprehending the message arguments is hindered only when full reading is impossible,
Table 1
Within-Cell Correlations of Pretest-Adjusted Opinion with Message Repetition Reading Time and Message Content Retention in Experiment 1

<table>
<thead>
<tr>
<th>Message Duration Treatment</th>
<th>Correlation of Pretest-Adjusted Posttest with:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Repetition Reading Time in:</td>
</tr>
<tr>
<td></td>
<td>Block 1</td>
</tr>
<tr>
<td>.6(T_{min})</td>
<td>-.05^{a,b}</td>
</tr>
<tr>
<td>T_{min}</td>
<td>-.08</td>
</tr>
<tr>
<td>1.4(T_{min})</td>
<td>-.05</td>
</tr>
<tr>
<td>1.8(T_{min})</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note: Each correlation is based on 72 pairs of scores.

^a A negative correlation between opinion and repetition reading time indicates a positive relationship between amount of information processing and opinion change.

^b An r of .23 is required for significance at the .05 level.
the repetition reading time data imply that an increasing amount of information processing in general (i.e., including both learning and appraisal) occurs with each successive increment in message duration. This latter inference is based on the reasonable assumption that subjects spent as much time reading a message repetition as was necessary to complete, to their satisfaction, the appraisal begun during the initial presentation. The amount of unfinished appraisal, of course, should vary with message exposure duration and, hence, the linear effect. If this assumption is correct, Experiment 1 provides good evidence for the stage conceptualization of information processing in persuasion, which contends that appraisal processing requires time in excess of that necessary for comprehension.

The opinion change results only partially support the information processing model. The increase in persuasion as message duration increased from \( T_{\min} \) to \( T_{\min} \) is consistent with the model and replicates earlier research (e.g., Eagly, 1974) demonstrating that persuasion is positively related to message comprehension. Also consistent with the model is the observed increase in persuasion following repetition of messages that were initially presented for either a \( T_{\min} \) or \( T_{\min} \) duration. In the case of an initial \( T_{\min} \) duration, which was sufficient for comprehension, this repetition effect is consistent with the
information processing hypothesis that post-comprehension appraisal processing influences amount of attitude change. Such support for the appraisal processing portion of the model, however, is not evident in the results of direct manipulation of message exposure duration. Specifically, the absence of consistently increasing persuasion when duration exceeded $T_{\text{min}}$ is inconsistent with predictions and is explainable by a simple learning theory of persuasion that does not postulate an appraisal process which supplements comprehension.

There are, however, several potential reasons for this pattern of results that do not imply such a rejection of the information processing model. First, it is possible that the dominant appraisal responses across subjects were not predominantly favorable for all messages as initially expected. Some of the messages may have elicited increasingly unfavorable responses with increasing processing and, in turn, produced decreasing persuasion. This effect would have canceled out the increasing persuasion for messages that elicited favorable responses. If this was so, one might expect greater variability in opinion posttest responses as message duration exceeded $T_{\text{min}}$ and appraisals became more extreme in both directions. An examination of pretest-adjusted posttest standard deviations in the various treatment cells, though, revealed only a small increase in variance (average standard deviations were 3.22,
3.50, 3.51, and 3.71 in the \(0.6(T_{\text{min}}), T_{\text{min}}, 1.4(T_{\text{min}}),\) and \(1.8(T_{\text{min}})\) duration conditions, respectively). This does not rule out the varying-message-appraisal account of the data, however, since other factors, such as subject differences in comprehension, may have inflated variance in the shorter duration conditions and thereby served to equate variances across all levels of duration.

A second reason for the failure to find increasing persuasion as message duration exceeded \(T_{\text{min}}\) may be that subjects, in fact, were not using the available time in the longer duration conditions for additional appraisal processing. Rather, the further processing that seems evident from the repetition reading time data may have involved some other mode of processing, such as rote rehearsal of content. Greenwald (1979) has noted that the mode of information processing may differ across various kinds of persuasion settings. For example, under some circumstances, a message recipient may engage in considerable appraisal of message arguments during the message presentation, adopting what Greenwald calls an immediate evaluation processing set. Other circumstances, on the other hand, might elicit a future usefulness set, characterized by a strong effort to memorize the message information for future use, but little appraisal (the set adopted by a student listening to a lecture is a good example). Still other possibilities are a passing interest set in which there is neither much
appraisal nor much rehearsal, and a scholarly analysis set in which effort is made at both appraisal and retention. Greenwald's analysis is consonant with the earlier mentioned idea that amount of appraisal processing varies not only as a function of ability, but of motivation as well. With respect to Experiment 1, it is clear that the information processing hypotheses could only be tested if subjects adopted either an immediate appraisal or a scholarly analysis processing set. But, for various reasons, this may not have happened. For one thing, subjects were instructed to deal with the messages as they would deal with messages received in the mass media. If this instruction was obeyed, the passing interest that often characterizes attention to mass media messages may have been the general rule during the experimental sessions. The same result may have been fostered by the very nature of the persuasive messages. By design, the message topics are not highly involving, and the messages, therefore, may not have been considered sufficiently important to merit extensive appraisal. Finally, the delayed opinion tests may have encouraged a future usefulness processing set that insured retention.

If any of these speculations are correct, longer durations may not have yielded much additional appraisal. Instead, without pressing time constraints, subjects simply
may have read at a more leisurely pace that involved actually taking more time for comprehension while engaging in only the minimal appraisal necessary to make an opinion response.

A third potential explanation of the opinion change results is that, for one reason or another, considerable appraisal processing occurred in the $T_{\text{min}}$ duration condition. This is possible, for example, if, despite instructions, subjects engaged in appraisal processing when producing a $T_{\text{min}}$ estimate. Alternatively, in the actual $T_{\text{min}}$ conditions, subjects may have employed the strategy of carefully appraising the first two or three arguments after each was comprehended, and then generalizing the appraisal outcome to the remaining (unprocessed) argument(s). These notions, however, are not supported by post-experimental conversations with subjects. When asked how they read the $T_{\text{min}}$ test messages and how they experienced the actual $T_{\text{min}}$ message duration conditions, most subjects agreed (a) that they read solely for comprehension in order to get through the entire message (test and actual) as fast as possible, and (b) that they needed more time than provided, as more than one subject put it, "to think about the message."

The various post hoc interpretations of the nonpredicted opinion results of Experiment 1, particularly the varying-message-appraisal and processing set versions, were taken into careful consideration in the design of Experiment 2.
CHAPTER 3
EXPERIMENT 2

Experiment 2 was undertaken to obtain a test of the full set of hypotheses about message exposure duration as outlined in the introductory chapter. To do this, it was necessary, first of all, to manipulate the dominant appraisal responses to messages so that they were predominantly favorable in one condition and predominantly unfavorable in another. It was also necessary to measure the favorability of appraisal, in order to observe more directly the effects of manipulated variables on this assumed mediator of persuasion. In light of the results of Experiment 1, the procedures selected to achieve these goals, along with some other procedural variations, were designed additionally to reduce potential variability in appraisal responses to the messages and to encourage an immediate evaluation processing set.

As a means of varying the dominant appraisal responses of subjects, a manipulation of appraisal response set was employed. It was reasoned that the state of expecting persuasive messages of a particular overall level of quality (e.g., good or poor) would lead to an initial appraisal
consonant with the expectation and, following the evaluative consistency principle, to a similarly consonant dominant appraisal response. Accordingly, subjects in Experiment 2 were led to expect messages of either high or low quality. Subjects learned at the outset of the session either that previous subjects had found the message to be high in quality and that, in fact, the messages had been constructed to contain only high quality arguments, or that previous subjects had judged the messages to be poor and that the message set was designed to include a large number of poor messages. In fact, all subjects read the same messages.

To measure appraisal, subjects were asked to judge the overall validity of the persuasive messages they read using a single numerical response scale. A validity judgment of this sort would seem to be a face valid indicator of the outcome of appraisal processing, since a belief about message validity should reflect the favorability of thoughts about the message arguments and their relation to existing ideas. This measure, a version of which has been successfully employed in research by Greenwald (1969; 1970), is also more conducive to the computer-based procedure and to within-subjects designs than is the relatively time-consuming listed-thoughts procedure described in the introduction.

Besides providing a measure of appraisal, the validity judgment task was expected to provide a check on the
effectiveness of the appraisal set manipulation and to encourage an immediate evaluation processing set. This set was further encouraged with instructions that requested subjects to carefully evaluate the messages in the service of arriving at validity and opinion judgments.

The predictions for Experiment 2 were the six hypotheses stated at the conclusion of the introductory chapter.

**Method**

**Subjects**

Seventy-eight male and female introductory psychology students at Ohio State University participated to partially fulfill a course requirement. A total of six subjects' data were discarded: one due to his excessively slow reading speed on the initial test of $T_{\text{min}}$; three because they failed to follow instructions; and two because of equipment malfunction that required termination of their session.

**Overview**

As in Experiment 1, subjects proceeded individually through a computer-controlled video presentation, encountering the reading-speed test of $T_{\text{min}}$, instructions, and a sequence of messages and measures (including unexpected end-of-session retention questions). Both the procedure for manipulating message exposure duration and the persuasive materials were the same as in Experiment 1. The major changes from Experiment 1 were (a) the inclusion of a
between-subjects manipulation of appraisal set which subjects encountered before beginning the computer-controlled presentation, (b) the inclusion of a measure of judged validity of the persuasive messages, (c) the inclusion of an explicit instruction to evaluate messages carefully, and (d) the elimination of delayed opinion measurement conditions, with the result that opinion and validity judgment measures always immediately followed the message. Other, more minor, procedural changes will be noted as they are encountered.

Procedure

Upon arrival, a subject was escorted by the experimenter to an individual cubicle containing the video monitor and response keyboard. After the subject was seated, the experimenter, who was holding a stack of mimeographed, one-page questionnaire forms, made the following statement:

Basically, what you will be doing today is reading a series of messages on this TV monitor and giving your reactions at various points. It will take 4 or 5 minutes to get things set up. In the meantime, I'd like you to look over these questionnaires filled out by previous participants, and let me know if you are familiar with any of the names. We'd like to avoid having mutual friends in the same experiment. So look these over and I'll be back in about 5 minutes.
The experimenter then handed the subject the stack of questionnaires and left the room, closing the door behind him.

**Initial manipulation of appraisal set.** The information contained on the questionnaires constituted the first of two components of the appraisal set manipulation. Each questionnaire (there were a total of 25 in a stack) contained, in longhand writing, the name, hometown, and comments about the persuasive messages of an introductory psychology student who had participated in a pilot task earlier in the academic quarter. These pilot subjects had been instructed to read four 4-argument persuasive messages and then to write comments about the overall quality of only either the worst or best message arguments they had encountered. They were further instructed that their comments should be general, overall evaluations, making no references to specific messages. The result of this pilot task was a large pool of favorable and unfavorable message evaluations from which to assemble the questionnaire stacks used in the present experiment. Examples of questionnaires containing favorable and unfavorable comments are provided in Appendix C. In the **positive appraisal set** condition, a very high percentage (22 out of 25) of the questionnaires the subjects leafed through contained favorable comments about the messages, while in the **negative appraisal set** condition, a very high percentage (again, 22 out of 25) of the questionnaires
contained unfavorable comments. Although subjects were not
directly asked to read the comments, a series of presently
unpublished experiments on interpersonal pleasuring by T. C.
Brock and his associates has used a similar set induction
procedure and found that subjects do indeed read at least
some of the comments.³

After four minutes had elapsed during which the subject
was alone in the cubicle with the stack of questionnaires,
the experimenter returned and asked the subject if any of
the names were familiar. If, as was the case for all sub-
jects, the subject either reported being familiar with none
of the names (n = 70) or reported being familiar with three
or fewer "previous participants" but had not discussed psy-
chology experiments with any of them (n = 2), the experi-
menter initiated monitor presentation of instructions.⁴

The monitor-presented instructions, which can be found
in Appendix C, were similar to those of Experiment 1. They
included the maximum reading speed test, followed by direc-
tions concerning message presentations and opinion and
validity measures.

**Bolstering of appraisal set manipulation.** Near the end
of the sequence of instructions, a monitor display page was
presented that was headed by the title "A Word About the
Messages". This page constituted the second, bolstering
component of the appraisal set manipulation. In the posi-
tive appraisal set condition, this page described the
messages as having been designed to include only arguments that, in the opinion of the experimenters, were relatively sound and logical. In the negative appraisal set condition, this page indicated that, to best parallel actual mass media settings, a fair percentage of the message arguments, by design, were characterized by poor reasoning, triviality, and/or otherwise poor quality. In both conditions the page concluded with a request that the subject carefully evaluate each message for quality in the service of making opinion and validity judgments.

The data collection sequence began with a random order presentation of opinion questions on the 18 message topics to be encountered in the session. This was followed by the sequence of messages and measures. A total of 16 messages were presented for various fixed durations (according to the within-subjects factorial design given below). Six of these messages were repeated: The first two repetitions served solely to get the subject accustomed to the repetition procedure and thereby reduce somewhat the dependence of later treatment repetition repetition reading times on sequential position; the latter four repetitions were probes for the repetition reading time measure. All messages were followed immediately by an opinion question. In half (8) of the first (or only) message presentations, the opinion question, in turn, was followed immediately by a
validity judgment question. Finally, after the message presentation sequence, four unexpected content retention questions were given according to the procedure of Experiment 1.

**Check on the appraisal set manipulation.** After completion of all four retention questions, the subject was instructed via the video monitor that the experiment was over and to find the experimenter. At this point, the experimenter administered a 3-page questionnaire that can be found in Appendix C. The first page of this questionnaire was exactly the same as the forms that the subject had leafed through in the initial manipulation of appraisal set. This first page requested the subject to record his/her overall reaction to the messages encountered during the session. The second page contained a 9-point scale on which the subject was asked to rate the overall quality of the messages (1 = Very Poor, 9 = Very Good). The written reaction and the numerical rating of overall message quality served as checks on the appraisal set manipulation (along with the validity judgments given to messages in the $T_{\text{min}}$ full comprehension—little appraisal message duration condition). The third page of the questionnaire probed for suspiciousness regarding the appraisal set manipulation by asking the subject to indicate what he/she thought was the purpose of the experiment. (Since no subject indicated awareness of the experimental hypotheses or the intent of
the appraisal manipulation, the suspiciousness check will not be discussed further.)

After these manipulation checks were obtained, the experimenter administered a written explanation of the experiment (see Appendix C), took questions, and dismissed the subject.

Dependent Measures

The opinion measure was the same as in Experiment 1, as were the repetition reading time and retention of message content measures, which were taken for different subsets of the persuasive messages. For a third subset of the persuasive messages, a validity judgment measure was taken. Validity judgments were given on 15-point scales which were posed on a monitor display page in the following (representative) format:

College Athletic Programs.

In your judgment, how valid, overall, were the arguments in the message you read about the above topic?

1  2  3  4  5  6  7  8  9  10  11  12  13  14  15
Completely : Somewhat : : Somewhat : Completely
Invalid : Invalid : : Valid : Valid

In all cases, the validity judgment question occurred on the monitor display page that immediately followed the opinion question corresponding to the message.
Design

Two direction-sequence replication groups of 18 subjects each, differing on both treatment sequence and direction-of-persuasion, were used within each appraisal set condition (total groups = 4, total N = 72). The within-subjects portion of the design was a 4 (message duration: \(0.6(T_{\text{min}}), T_{\text{min}}, 1.4(T_{\text{min}}), \text{and} 1.8(T_{\text{min}})\)) x 4 (internal replication) factorial. Four messages (1 in each duration condition) were repeated after a 10-unit interval for the purpose of measuring self-paced repetition reading time and four messages (1 in each duration condition) served as targets for the unexpected end-of-session retention tests. Finally, a validity judgment was obtained for eight messages (2 in each duration condition).

Results

Manipulation of Message Exposure Duration

Subjects' estimated \(T_{\text{min}}\) reading times obtained from the maximum reading speed test ranged from 21 sec. to 70 sec. and averaged to 40.08 sec. among subjects whose data were analyzed. The standard deviation was 10.17 sec. These values are quite similar to those obtained in Experiment 1, a fact which attests to the reliability of the procedure for assessing minimum comprehensible reading time. There were no effects on the \(T_{\text{min}}\) estimates due to appraisal set or direction-sequence replication (all F's
<1). Finally, the resulting average lengths of message duration were: \(0.6(T_{\text{min}}) = 19.08\) sec.; \(T_{\text{min}} = 34.58\) sec.; 
\(1.4(T_{\text{min}}) = 50.98\) sec.; and \(1.8(T_{\text{min}}) = 67.08\) sec.

**Manipulation of Appraisal Set**

On the post-session ratings of overall message quality, subjects in the positive appraisal set groups rated the messages significantly higher in overall quality than subjects in the negative appraisal set groups (\(M's = 6.81\) and 4.75 for these conditions, respectively, \(t(70) = 5.57, p < .001\)). A second check on the success of the appraisal set manipulation can be obtained by examining the validity judgments given to messages presented for the \(T_{\text{min}}\) duration (the full analysis of validity judgments is given below). On this measure, subjects in the positive appraisal set groups also gave higher evaluations of the messages than those in the negative appraisal set groups (\(M's = 9.51\) and 8.53, \(t(142) = 1.65, p < .05,\) one-tailed)) These data provide a strong indication that the manipulation of appraisal set was successful.

**Opinion Change**

**Overall persuasive impact.** Comparison of pretest opinions with posttest opinions revealed significant overall opinion change (overall mean difference \(M_p\) between posttests and pretests: 1.23 units; \(F(1,68) = 83.43, p < .001\)). As expected, overall persuasive impact was
greater in the positive appraisal set groups ($M_D = 1.60$) than in the negative appraisal set groups ($M_D = 0.86$) (Pretest vs. Posttest x Appraisal Set interaction: $F(1,68) = 6.96, p < .010$).

**Treatment effects.** As in Experiment 1, treatment effects were analyzed by performing a multiple regression in which posttests were predicted from pretests, and then executing an analysis of variance on the residual (pretest-adjusted) posttest scores. The analysis of variance included message duration and internal replication as within-subjects factors and appraisal set and direction-sequence as between-subjects factors. This analysis revealed that, as noted above, there was greater opinion change in the positive than in the negative appraisal set groups ($F(1,68) = 7.92, p < .006$). There was also a significant message duration main effect ($F(3,66) = 3.22, p < .028$), indicating that, as duration increased, opinion change increased ($F(1,68) = 9.72, p < .003$ for linear trend component of duration; $F$'s < 1 for quadratic and cubic trends). The predicted Duration x Appraisal Set interaction did not approach significance. Instead, as can be seen in Figure 7, persuasion increased monotonically as a function of message duration as predicted in the positive appraisal set condition (linear trend component of duration in this condition only: $F(1,34) = 6.03, p < .019$).
Figure 7. Estimated mean opinion change in Experiment 2 as a function of message duration and appraisal set. Each point is the sum of the mean pretest-adjusted posttest score at the particular message duration level added to the average pretest-to-posttest opinion change over all treatments (= 1.23 scale units). Each mean is based on 144 observations (4 per subject).
Contrary to predictions, however, a similar monotonic increase was also observed in the negative appraisal set condition (linear trend component of duration: $F(1,34) = 3.81, p < .059$).

For the treatments that had message repetitions, opinion responses given after the initial (fixed) message presentation and after the repetition were compared as in Experiment 1. The two posttest means in each initial message duration condition are plotted in Figure 8, collapsed over appraisal set which had no effects.

Analysis of variance revealed that persuasion was greater overall after the repetition than after the initial presentation ($F(1,68) = 4.47, p < .038$). As in Experiment 1, however, this repetition effect was qualified by a near significant interaction of posttest timing and initial message duration ($F(3,66) = 2.08, p < .111$) that included a significant Posttest Timing x Linear Trend of Duration component ($F(1,68) = 6.00, p < .017$). The greatest effect of repetition occurred when the initial message duration was insufficient for comprehension ($F(1,68) = 6.22, p < .015$). The repetition effect only approached significance when initial message duration was $T_{\text{min}}$ ($F(1,68) = 2.18, p < .145$) and was not at all evident in the longer initial message duration conditions ($F$'s $< 1$).
Figure 8. Opinion posttest means in those conditions of Experiment 2 where an opinion response was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message. Opinion means are shown for both posttests as a function of the duration of the initial message presentation. High numbers reflect greater agreement with the message (on a 15-point scale). Each point is based on 72 observations (1 per subject).
Validity Judgments

Message validity judgments are presented in Figure 9 as a function of appraisal set and message duration. As can be seen, the pattern of validity judgments largely paralleled the persuasion pattern. An analysis of variance revealed that, as predicted, messages were appraised as more valid in the positive appraisal set condition ($M = 9.82$) than in the negative appraisal set condition ($M = 8.76$) ($F(1,68) = 7.42, p < .008$). The only other significant effect was a main effect for message duration ($F(3,66 = 3.30, p < .026$). The linear trend component of this effect was highly significant ($F(1,68) = 10.15, p < .002$) while the quadratic and cubic components were insignificant ($F$'s < 1). As can be seen in Figure 9, subjects in both the positive and negative appraisal set groups judged the messages to be more valid the longer the message duration (linear trend components of message duration: $F(1,34) = 6.09, p < .019$ and $F(1,34) = 4.13, p < .050$ in the positive and negative appraisal set conditions, respectively).

Repetition Reading Time

Figure 10 presents mean repetition reading time as a function of initial message duration. Since there were no main or interaction effects involving appraisal set (all $F$'s < 1), this factor is collapsed in Figure 10. Analysis of variance revealed a highly significant main effect for message duration ($F(3,66) = 25.47, p < .001$). This effect
Figure 9. Mean message validity judgment in Experiment 2 as a function of message duration and appraisal set. Judgments were made on a 15-point scale (1 = completely invalid, 15 = completely valid). Each mean is based on 72 observations (2 per subject).
Figure 10. Mean time (in seconds) spent reading message repetitions in Experiment 2 as a function of duration of initial message presentation (collapsed over appraisal set). Each point is based on 72 observations (1 per subject).
contained a large linear trend component ($F(1,68) = 57.33, p < .001$) as well as significant quadratic and cubic trend components ($F's(1,68) = 20.28$ and $7.51, p's < .001$ and $0.008$, respectively). It can be noted in Figure 10 that, by far, the greatest decrease in repetition reading time occurs as duration increases from $0.6(T_{min})$ to $T_{min}$. There is little further decrease between $T_{min}$ and $1.4(T_{min})$ and a larger, but still relatively insubstantial decrease between $1.4(T_{min})$ and $1.8(T_{min})$. Part of this overall curvilinear effect can be attributed to sequential position effects, judging by the presence of a significant Direction-Sequence Replication x Message Duration interaction ($F(3,66) = 5.70, p < .002$) which is shown in Figure 11. As can be seen, despite the use of two "practice" repetitions, the particular sequential position of a treatment message repetition influenced reading times. This is also shown in a multiple regression analysis, in which sequential position was found to be a strong predictor of repetition reading time ($F(1,208) = 60.11, p < .001$). Nonetheless, this analysis also revealed that the linear ($F(1,208) = 36.35, p < .001$) and the quadratic ($F(1,208) = 16.77, p < .001$), but not the cubic ($F < 1$) trend components of message duration remain significant predictors of repetition reading time after the effects of position and direction-sequence-replication are removed. Thus, although there were other influences on this measure, initial message duration had a strong but
Figure 11. Mean time (in seconds) spent reading message repetitions in Experiment 2 as a function of duration of initial message presentation and direction-sequence replication (sequence) (collapsed over appraisal set). The sequential position of the repetition relative to the other repetitions in the same direction-sequence replication is given in parentheses beside the appropriate point. Each point is based on 36 observations (1 per subject).
decelerating independent effect on repetition reading time in Experiment 2.

Retention of Message Content

The unexpected end-of-session retention test results are presented in Figure 12. The only significant effect obtained in an analysis of variance was a main effect for message duration \( F(3,66) = 3.21, p < .029 \). Although the effects were less pronounced than in Experiment 1, there appears to have been less retention in the \( .6(T_{\text{min}}) \) duration condition than in the longer duration conditions which, in turn, show a similar amount of content retention.

Correlational Analyses

The within-cell correlations between the various dependent measures in those treatment cells in which two or more measures were taken are presented in Table 2. As in Experiment 1, there were no significant correlations between pretest-adjusted opinion and either message content retention or repetition reading time. Similarly, validity judgments were largely uncorrelated with message content retention (there were no cells in which repetition reading time and validity judgment were both measured). In contrast to these insignificant within-cell correlations involving retention and amount of processing, the correlations between pretest-adjusted posttest opinion and validity judgment were consistently significant and moderately
Figure 12. Message content memory in Experiment 2: Mean number (maximum = 2) of message argument descriptions correctly identified as a function of message duration (collapsed over appraisal set). Each point is based on 72 observations (1 per subject).
Table 2
Within-Cell Correlations of Pretest-Adjusted Opinion, Judged Message Validity, Message Repetition Reading Time, and Message Content Retention in Experiment 2

<table>
<thead>
<tr>
<th>Correlation of Pretest-Adjusted Opinion with:</th>
<th>Appraisal Set Condition</th>
<th>Message Duration Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.6Tmin</td>
</tr>
<tr>
<td>Judged Message Validity</td>
<td>Positive</td>
<td>.24</td>
</tr>
<tr>
<td></td>
<td>1st Observation</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>.50**</td>
</tr>
<tr>
<td></td>
<td>1st Observation</td>
<td>.57***</td>
</tr>
<tr>
<td></td>
<td>2nd Observation</td>
<td></td>
</tr>
<tr>
<td>Repetition Positive</td>
<td></td>
<td>-.31b</td>
</tr>
<tr>
<td>Repetition Negative</td>
<td></td>
<td>-.16</td>
</tr>
<tr>
<td>Reading Time Positive</td>
<td>Positive</td>
<td>.07</td>
</tr>
<tr>
<td>Reading Time Negative</td>
<td>Negative</td>
<td>-.16</td>
</tr>
</tbody>
</table>

Correlation of Judged Message Validity with:

| Content Positive                           | -.19                   | .00   | -.03   | -.21   |
| Content Negative                           | .10                    | -.08  | .12    | -.02   |

Note: Each correlation is based on 36 pairs of scores.

a For each subject, message validity judgments were obtained in two separate treatments having the same message duration. Accordingly, among the pair of treatments having the same message duration for which both opinion and judged validity were measured, "1st observation" refers to the treatment that appeared first in the experimental sequence.

b A negative correlation between opinion and repetition reading time indicates a positive relationship between amount of information processing and opinion change.

*p < .05, **p < .01, ***p < .001
strong. As can be seen in Table 2, this is especially the case in the negative appraisal set condition. In the positive appraisal set condition, the opinion-validity correlation appears to be somewhat dependent on message duration. There is little relationship at the shortest duration, a moderate amount at the intermediate durations, and quite a large correlation at the longest duration level.

**Discussion**

The most striking aspect of the results of Experiment 2 is the consistently similar effect of message exposure duration across two dependent measures (opinion change and message validity judgment) and two opposing subject appraisal sets. Whether or not subjects expected high quality messages (positive appraisal set) or poor quality messages (negative appraisal set), the persuasive impact of the messages increased monotonically as message duration increased over four equally spaced levels. Similarly, subjects' judgments of message validity became increasingly favorable as duration increased, regardless of set. The sole effects of appraisal set were main effects in which persuasion was higher overall and messages were rated more valid overall in the positive appraisal set condition.

These results may be compared with the hypotheses regarding message exposure duration and, in the case of the persuasion results, with the results of Experiment 1. First of all, the relatively close isomorphism between the
pattern of opinion change and the pattern of validity judgments is supportive of the assumption that appraisal is a mediator of persuasion. With respect to the message duration effects, the increasing trends in the favorable appraisal set condition nicely support all of the hypotheses concerning the case when the dominant appraisal response is message-favorable. This level of support is in contrast to the partial support provided in Experiment 1. The increasing trends in the negative appraisal set condition would appear partly inconsistent with the hypotheses concerning the case when the dominant appraisal response is unfavorable -- if an unfavorable dominant appraisal response was indeed created in this condition, one would expect decreasing persuasion and less favorable appraisal as message duration increased past $T_{\text{min}}$.

The pattern of opinion change and validity judgment results, and its relation to the hypotheses regarding message duration, can be understood if it is assumed that (a) the procedures of the experiment, as intended, induced an immediate evaluation processing set with which subjects made a careful appraisal of each message and (b) the messages generally contain high quality, convincing arguments. If these assumptions are correct, it is understandable, first of all, why a trend for increasing persuasion when message duration exceeded $T_{\text{min}}$ was observed in this experiment but not in Experiment 1. Evidently, the procedures of
Experiment 1, as suspected, did not induce the motivation to make careful message appraisals. The trend toward greater persuasion and more favorable appraisal when duration exceeded $T_{\text{min}}$ in the negative appraisal set condition, instead of the decreases predicted by the conceptual model, is also understandable in that it suggests that the high message quality was having strong effects on appraisal. Such effects, in fact, may have compensated for subjects' initial set to be critical. In other words, it is possible that the dominant appraisal response was determined by the message itself, rather than the appraisal set with which subjects initially approached the message. Although subjects may have expected and looked for poor message quality, they instead found reasonable arguments which may have led to a mildly positive initial response and, in turn, a positive dominant appraisal response. This post-hoc analysis, of course, is entirely consistent with the information processing model, since message quality is considered to be an important determinant of dominant appraisal response. Thus, all in all, the opinion change results, taken together with the validity judgments that indicate generally positive appraisal in both appraisal set conditions, provide very suggestive evidence for the information processing model and its basic assumption that persuasion is a function of both comprehension and appraisal components of processing.
Although the data easily can be seen as supportive of the basic information processing model, Experiment 2 failed to provide a test of the full set of hypotheses derived from the model. A condition in which the dominant appraisal response is negative, rather than only the initial appraisal set, was not created. Such a condition was created in Experiment 3.

Opinion Change-Validity Judgment Correlational Data

The consistently significant within-cell correlations between pretest-adjusted opinion (opinion change) and judged message validity lend further credence to the hypothesis that amount of persuasion is influenced by the evaluative outcome of appraisal processing. The correlations are similar in magnitude to the correlations between opinion change and evaluative indices of listed post-message thoughts that have been obtained in previous research (e.g., Cullen, 1968; Love, 1968). In the present data, it is interesting to note that the correlations obtained in the longest message duration condition display the most stability -- in all treatment cells involving this duration condition, the opinion change-validity judgment correlations are relatively strong. This is readily understandable in terms of the information processing model. The longest message duration condition should produce the greatest amount of appraisal processing. Thus,
appraisal-produced thoughts, relative to thoughts contributed by the message via comprehension, should have their greatest impact on opinion change in this condition.

Retention and Processing Data

The pattern of results on the content retention and repetition reading time measures in Experiment 2 generally paralleled the patterns observed in Experiment 1. Retention of message content was poorest when message duration was insufficient for full comprehension and was roughly equivalent when duration was just sufficient or longer. Repetition reading time, which has been viewed as an index of amount of information processing during the initial message presentation, showed a monotonic decrease as initial message duration increased. However, unlike in Experiment 1, this relationship was nonlinear. Repetition reading time decreased dramatically as duration was increased from a subcomprehension to a sufficient-for-comprehension level, but further increases in duration resulted in only small additional decreases in repetition reading time. In light of the opinion and validity judgment data, it is unlikely that this curvilinear relationship indicates the absence of substantial increases in information processing as message duration exceeded $T_{\text{min}}$. A more likely reason for this effect revolves around the partial dependence of repetition reading time on sequential position of the repetition, coupled with the fact that only one observation per
subject was obtained on this measure in each message duration condition. As can be observed in Figure 11, the most prominent and, in fact, only substantial deviation from linearity occurred when the repetition of a $T_{\text{min}}$ duration message was the last repetition encountered in the session. It would appear that the repetition reading time measure necessitates multiple observations in each condition in order to overcome the sequential position effect and yield stable estimates.

Although this methodological interpretation of the repetition reading time data is quite tenable, it is certainly possible, in addition, that the largest difference in total amount of information processing will occur between message durations that are too short and just-long-enough for comprehension. This is especially likely to be true (a) if comprehension is the more time-consuming encoding process and (b) if, upon achieving full comprehension (in the $T_{\text{min}}$ condition), a period of time is devoted to appraisal after the message presentation (e.g., during exposure to the opinion item). Both of these conditions may have held in Experiment 2.

In light of the overall consistency and clarity in the pattern of information processing data observed in Experiments 1 and 2, measures of amount of information processing were not included in Experiment 3. The results on these measures in Experiments 1 and 2 suggest that the manner of
manipulating message exposure duration has its intended effects on processing.
Like Experiment 2, Experiment 3 was undertaken to test the full set of hypotheses outlined in the introduction. This time, however, the manipulation of dominant appraisal response was attempted by directly varying the quality of the persuasive messages; with the expectation that exposure to messages of high quality would yield a favorable dominant appraisal response, while exposure to poor quality, easily refutable messages would yield an unfavorable dominant appraisal response. In light of the apparently favorable appraisal responses observed under both positive and negative appraisal sets in Experiment 2, the messages used in the first two experiments were employed as the high quality messages in Experiment 3. Low quality messages on the same topics were newly created, primarily by weakening the arguments in the existing (high quality) messages as described below.

To make an initial assessment of the adequacy of the variation in message quality, a pilot experiment was conducted prior to Experiment 3. Because the results of this pilot experiment prompted adjustments in the usual
computer-based procedures in Experiment 3, its method and findings will be reported before describing Experiment 3 proper.

Pilot Experiment

Method

Persuasive messages. From the original topic set, a subset of 16 topics and one or the other direction-of-persuasion for each was created by random selection to serve as a set of topics in a message set in which messages varied in quality. On each of the 16 topics, there was a high quality message consisting of 4 rather reasonable, logical, and convincing arguments, and a low quality message, consisting of 4 relatively illogical, weak, and unconvincing arguments. The messages used in Experiments 1 and 2 served as the high quality messages. The low quality messages were written primarily by weakening the arguments in these high quality messages. This weakening was accomplished for specific arguments by one or more of several diverse procedures, including:

(a) Altering supportive "facts" to be less important and less compelling as reasons for the advocated policy (e.g., arguing against statehood for Puerto Rico by noting that at least 25% of Puerto Ricans cannot speak English vs. the original statement that fewer than 30% can speak English);
(b) Stating a fact but giving a poor reason why that fact supports a conclusion (e.g., noting that another means of preventing the extinction of rare animals is as effective as breeding in captivity, and then arguing that rare animals should not be bred in captivity because having two methods is unnecessary);

(c) Modifying the stated consequence of an advocated policy so as to make it unimportant, unrealistic, or irrelevant (e.g., arguing that watching violence on T.V. encourages children to engage in rough horseplay vs. the original argument that watching T.V. violence is related to performance of excessively aggressive responses).

In several instances, an existing (high quality) message argument did not lend itself to any weakening procedure. In these cases, a totally new argument was written with care taken to make it as weak and unreasonable as possible. For all low quality arguments, finally, care was taken to make the side taken obvious. Examples of low quality messages are provided in Appendix A.

**Subjects.** Forty-eight male and female introductory psychology students at Ohio State University participated for course credit.

**Procedure.** The general procedure was similar to that of the earlier experiments. After being escorted to individual cubicles, subjects were given brief verbal orienting instructions. This was followed by a
computer-controlled monitor presentation of the reading speed test, procedural instructions, opinion pretests, messages and measures, and, finally, debriefing. The instructions and debriefing texts are provided in Appendix D. The significant changes in procedure from previous experiments were:

(a) The instruction page entitled "A Word About the Messages", as in Experiment 2, requested subjects to give each message thoughtful consideration. It also pointed out, however, that in order to accurately simulate mass media communication, a mixture of "good" and "poor" messages would be presented. Brief definitions of "good" and "poor" were also given on this page,

(b) During the message-measure sequence, there were no message repetitions or end-of-session retention questions. The only dependent measures were opinion responses and message validity judgments. Immediately after each message, both an opinion and a validity measure were taken.

Subjects encountered 16 opinion pretests, 16 messages, and 16 sets of opinion posttests and validity judgments during the experimental session.

Design. A 4 (message duration: \(0.6(T_{\text{min}}), T_{\text{min}}, 1.4(T_{\text{min}}), \text{or } 1.8(T_{\text{min}})\)) x 2 (message quality: high or low), x 2 (question order: opinion question preceding or following the validity judgment) within-subjects factorial design was employed, with pretests taken on the opinion
measure. Three replication groups of 16 subjects each (total N = 48) were run in temporal succession. Each group received a different treatment sequence order.

Results and Discussion

The opinion change and validity judgment results are displayed in Figure 13. As can be seen, the results on both measures revealed strong differences in the intended directions between the high quality and low quality message conditions. Separate analyses of variance on the pretest-adjusted posttest opinion scores (obtained from the usual posttest on pretest regression analysis) and the validity judgments each revealed a main effect for message quality, to the effect that the high quality messages were more persuasive and received much higher validity ratings (\( F'(1,45) = 32.13 \) and 44.67, both \( p's < .001 \), on the opinion and validity measures, respectively).

No other effects approached significance on either of the dependent measures (all \( F's < 1 \)). A potential explanation of the lack of any reliable effects due to message duration, though, may stem from a related observation; namely that large differences in persuasion and judged validity due to message quality are present even in the \( \frac{.6(T_{\text{min}})}{6} \) message duration condition, where it was highly improbable that subjects could read and comprehend an entire message. This effect suggests that, in the face of time constraints due to short message durations, subjects may
Figure 13. Results of the pilot study of Experiment 3. (A) Mean estimated opinion change (= mean pretest-adjusted posttest score within a treatment + 0.71 (overall pretest-to-posttest change) and (B) mean message validity judgment as a function of message duration and message quality. Each mean is based on 96 observations (2 per subject).
have adopted a strategy of carefully reading the first one or two arguments (out of a total of four) in a message in order to assess its validity. In other words, knowing that messages would differ in quality, subjects may have been making a thoughtful, more or less extensive, appraisal of at least a portion of the message at even the shortest level of message duration. They may have generalized this appraisal, in turn, to the message as a whole.

This possible artifact, of course, precludes a strong test of the hypotheses, so a procedural change was mandated for subsequent experiments. In Experiments 3 and 4, instead of presenting all message arguments on a single monitor display, the individual arguments comprising a message were presented on separate successive display pages.

From the present data, it is impossible to say conclusively whether the message quality manipulation effectively influences the dominant appraisal response. The large main effect differences due to quality, however, represent a very strong reason to believe that it does. Accordingly, the same message quality manipulation was used in Experiment 3 proper.
Method (Main Experiment)

Subjects

Sixty-five male and female participants provided data. Sixteen of these were introductory psychology students at Ohio State University who participated for course credit. The remaining 49 were paid volunteers who responded to an ad in the campus newspaper. The data of one psychology student were lost due to an equipment malfunction.

Procedure

The procedures of the main experiment were precisely the same as those of the pilot experiment, with the following exceptions revolving around the change in the format of message presentation:

(a) The maximum reading speed test required subjects to read at their fastest comprehensible speed, 6 single, four-line persuasive arguments (3 on each of the two topics reserved for the reading test) presented on separate successive display pages. The average of the 6 measured reading times was taken as $T_{\text{min}}$.

(b) The four levels of message duration encountered by subjects were changed to $.5(T_{\text{min}})$, $T_{\text{min}}$, $1.5(T_{\text{min}})$, and $2.0(T_{\text{min}})$.

(c) The persuasive messages comprising experimental treatments consisted of 3 (rather than the 4 used
previously) separate arguments. The presentation format involved 4 separate display pages. The first page gave the topic of the message (i.e., the heading or title of the message formats used in earlier experiments) and indicated the presentation duration (in seconds) that would characterize each of the 3 following message "paragraphs." The next three pages each displayed one, four-line persuasive argument.

After each complete message an opinion response and validity judgment were obtained.

Design

As in the pilot experiment, a 4 x 2 x 2 within-subjects factorial design was employed in which the factors were message duration (levels defined above), message quality (high or low), and question order (opinion response or validity judgment first). Pretests were taken on the opinion measure before the message sequence commenced. Four replication groups of 16 subjects each, differing in order of treatment sequence, experienced the within-subjects design (total N = 64). Because of a need to use subjects as soon as they became available, the replication groups were run in temporal succession. This procedure resulted in some differences between the groups in the ratio of paid-to-introductory-psychology-student subjects, but these differences do not seem to have influenced results judging
from the absence of replication effects. (Nor have differences in subject recruiting appeared to be related to results in previous computer-based research.)

**Results**

**Manipulation of Message Exposure Duration**

Subjects' estimated $T_{\text{min}}$ reading times for single arguments ranged from 4 to 20 seconds and averaged to 10.41 sec. The standard deviation was 3.43 sec. The estimates did not differ across replications ($F < 1$). The average lengths of single argument duration during the experimental sequence were 4.38, 9.54, 14.68, and 19.80 sec., across the four different levels of message duration.

**Opinion Change**

**Overall persuasive impact.** The overall pretest-to-posttest change in opinion produced by the three-argument messages was 0.49 units ($F(1,60) = 13.45, p < .001$). High quality messages produced an average of 0.88 units change, while low quality messages produced an average of 0.10 units change.

**Treatment effects.** Estimated opinion change as a function of message duration and message quality is pictured in Figure 14. Analysis of variance of pretest-adjusted posttests revealed that high quality messages were more persuasive than low quality messages ($F(1,60) = 19.36, p < .001$). However, the predicted interaction of message
Figure 14. Mean estimated opinion change in Experiment 3 as a function of message duration and message quality. Each point is the sum of the mean pretest-adjusted posttest score within a treatment combination added to the average pretest-to-posttest opinion change over all treatments (= 0.49 scale units). Each mean is based on 128 observations (2 per subject).
duration did not approach significance ($F < 1$). The only other reliable effect on the opinion change measure was an unexpected main effect for question order ($F(1,60) = 7.06, p < .010$). Whether messages were of high or low quality, they had greater positive impact when the opinion posttest followed the validity judgment (average estimated opinion change (pretest-adjusted posttest average + overall pre-to-post change) = 0.74) than when it preceded the validity judgment ($M = 0.24$).

**Validity Judgments**

Figure 15 displays the average message validity judgment as a function of message duration and message quality. An analysis of variance revealed that high quality messages were judged more valid than low quality messages ($F(1,60) = 107.30, p < .001$) and that, as is evident in the graph, this difference between the two message types increased as message duration increased (Message Duration x Message Quality interaction $F(3,58) = 5.46, p < .002$). Looking at Figure 15, it can be seen that a substantial linear decrease in the favorability of validity judgments of low quality messages occurred as duration increased across the first three levels ($F(1,60)$ for linear trend = 12.06, $p < .001$; $F$ for quadratic trend = 2.42, $p < .125$). On the other hand, although the effect was not significant, there was a slight increase in favorability of judgments of high quality messages over this same range of duration.
Figure 15. Mean message validity judgment in Experiment 3 as a function of message quality and message duration. Judgments were made on a 15-point scale (1 = completely invalid, 15 = completely valid). Each mean is based on 128 observations (2 per subject).
While there were no other statistically significant effects on the validity measure, it is interesting to note that the effect of question order approached significance \((F(1,60) = 1.78, p < .187)\) and was directionally consistent with the significant effect of this variable on opinion change. In addition to its association with greater persuasive impact, the validity judgment-then-opinion judgment sequence was associated with somewhat higher validity ratings \((M = 8.34)\) than was the reverse order \((M = 8.05)\). Without waiting for the discussion section, it must be noted here that this apparent greater favorability toward the message position when a validity judgment was made immediately after the message is not readily understandable. Since the effect did not show up on either dependent measure in the pilot experiment, it may represent an alpha error and so it will not be considered further.

**Correlational Analyses**

The within-cell correlations of pretest-adjusted opinion and judgment of message validity are presented in Table 3. Although the correlations tend to be somewhat lower than those observed in Experiment 2 (especially at the longer message duration levels), most of them, as expected, are significant and of moderate strength.
Table 3

Within-Cell Correlations of Pretest-Adjusted Opinion and Message Validity Judgment in Experiment 3

<table>
<thead>
<tr>
<th>Message Quality</th>
<th>Question Order</th>
<th>Message Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.5T_{min}</td>
</tr>
<tr>
<td>High</td>
<td>Opinion First</td>
<td>.28*</td>
</tr>
<tr>
<td></td>
<td>Validity First</td>
<td>.30*</td>
</tr>
<tr>
<td>Low</td>
<td>Opinion First</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Validity First</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note: Each correlation is based on 64 pairs of scores.

*p < .05, **p < .01, ***p < .001
Discussion

Opinion change in Experiment 3 was not reliably influenced by either message duration or the interaction of duration and message quality. High quality messages had much greater persuasive impact than did low quality messages. But, contrary to theoretical expectations, there was no strong tendency for the impact of high quality messages to increase with increasing message duration, nor was there a tendency for low quality messages to have decreasing impact. In strong contrast, the index of appraisal outcome, judged message validity, was strongly affected by message duration as well as message quality. With increases in duration, judgments of low quality messages became increasingly unfavorable while judgments of high quality messages showed a small, nonsignificant trend toward increasing favorability.

As a step toward interpretation of these results, it first must be noted and discussed that subjects' ability to discriminate high and low quality messages at the supposedly sub-comprehension duration level \(0.5T_{\text{min}}\) was reduced but not eliminated by presenting arguments separately. At this duration level, responses in the two quality conditions differed by about a full scale unit on both dependent measures (see Figures 14 and 15). This apparent discriminatory ability is rather puzzling, but it potentially holds the key to understanding the unsupportive persuasion results.
The most likely reason for such ability is that, for at least some subjects, the $T_{\text{min}}$ estimates were not accurate reflections of maximum reading speed. Instead, a number of subjects may have read more slowly on the $T_{\text{min}}$ test than was necessary for comprehension, possibly because they assumed that appraisal processing is entailed in the definition of "full comprehension" and so consciously or unconsciously devoted some time to message evaluation. If this tendency was present, $\frac{1}{2}T_{\text{min}}$ messages could have been sufficiently comprehended to allow subjects to make an appraisal judgment of at least one message argument, perhaps from a memory basis during the post-presentation time period during which the dependent measures were requested. In fact, the use and success of such an appraisal strategy may have been particularly likely in the present experiment (relative to Experiment 2) due to the procedures of (a) presenting arguments singly and (b) informing subjects of definite differences in the convincingness of messages.

The importance of noting the apparent occurrence of some message appraisal in the $\frac{1}{2}T_{\text{min}}$ duration condition is that it helps account for the discouraging lack of message duration effects on the opinion change measure. Specifically, if some appraisal processing were possible at the shortest duration level, the relative increases in amount of such processing produced by increased message duration
may have been insufficient to affect observable opinion change.

The ability to appraise short duration messages has been traced, at a speculative level, to a misunderstanding of instructions for the $T_{\text{min}}$ reading test. Unfortunately, there is no effective way of verifying this nor of determining what subjects might have misunderstood the instructions and made appraisals of test messages. If the identification of such subjects were possible, an internal analysis might be conducted in which it would be expected that only these subjects would show data patterns inconsistent with the information processing model. The one available clue for identification, however, is the value of the $T_{\text{min}}$ estimates (which ranged quite widely -- from 4 to 20 seconds). But while one might expect longer estimates to be associated with a greater possibility of appraisal, this relationship is likely to have been weak at best. First, it is impossible to separate those who read slowly in order to appraise from those who read slowly because they are slow comprehenders. Second, it is probable that some of the fastest readers were most able to make post-presentation appraisals, since good readers are known to be capable of holding more of a text in short-term memory than are poor readers (Perfetti & Goodman, 1976). Accordingly, it is impossible to verify the proposed artifactual explanation of the persuasion results on the basis of any
internal analysis. The explanation must stand on its plausibility, in conjunction, perhaps, with the fact that it has only been in this experiment that no increase in opinion change was observed when message duration increased from sub-$T_{\text{min}}$ to $T_{\text{min}}$.

Whatever the cause of the disappointing persuasion pattern, it did not prevent message duration from having strong effects on judgments of message validity. While not isomorphic with the hypothesized pattern, the effects on validity judgments were basically in line with an information processing perspective, in that they show directional effects of increasing processing (duration) which are consistent with the dominant appraisal response produced by message quality. The basic discrepancies from the hypothesized pattern were (a) the lack of a significant effect of message duration on judgments about high quality messages and (b) the decrease rather than increase in favorability of validity judgments when duration increased from $.5T_{\text{min}}$ to $T_{\text{min}}$. Both of these outcomes are understandable on the basis of the argument that appraisal processing was occurring in the short duration conditions. If appraisal processing, rather than only comprehension, increased between the $.5T_{\text{min}}$ and $T_{\text{min}}$ durations, the increasing unfavorability observed over this range is the theoretical expectation. And if high quality, $.5T_{\text{min}}$ duration messages received some favorable appraisal, the amount of additional
processing accompanying longer durations might not have been substantial.

While lending some credence to both the theoretical model and the post hoc interpretation of the persuasion data, the validity judgment results raise two questions. First, there is the matter of the nonisomorphism of persuasion and validity judgment trends: the latter revealed an influence of variation in processing time while the former did not. Since appraisal is the assumed mediator of persuasion, the information processing model predicts a direct correspondence between opinion change and the evaluative nature of the thoughts produced during appraisal processing, which the validity judgment measure was meant to index. In the present experimental case, though, there are several reasons why the correspondence might appear small. To begin with, the judgment of message validity represents but one of several components of the appraisal process. Other factors, such as pre-existing opinions and perhaps the affective reactions to the experimental situation, no doubt contributed to overall appraisal and thus may have suppressed or enhanced persuasion without having concomitant effects on validity judgments. In other words, the validity judgment may have been less "contaminated" by such "extraneous" factors and hence more sensitive to message quality and processing quantity. Secondly, although it is assumed that persuasion is a function of appraisal,
the quantitative nature of this function is presently unspecifiable. It is unclear, for example, how much more favorable message-related thoughts have to be before there is a measurable increase in persuasion. Finally, the response scales used to measure the variables may themselves be differentially sensitive to variation in comprehension and appraisal processing.

The second question concerning the validity judgment results is why there was a considerably stronger effect of message duration on judgments of low quality relative to high quality messages. The simplest explanation of this difference is that the low quality messages are exceptionally poor and produce a strong negative dominant response whereas the high quality messages, as noted in Chapter 2, might elicit a more ambivalent response because they are not flawless. The difference in the strength of the dominant response might even go beyond differences in the content of messages, in that is is well known from work on impression formation that negative information about people or other objects is given greater weight than positive information in a resulting impression (c.f., Hamilton & Zanna, 1972). A second possibility is that subjects were somewhat confident of their judgments of short duration, high quality messages (hence the favorable judgments at $0.5T_{\text{min}}$), but not of their judgments of short duration, low quality messages (hence the neutral judgments at $0.5T_{\text{min}}$).
If so, the steep decrease in favorability in the low quality case might partly represent an increase in confidence accompanying the greater time for evaluation.

Overall, the results of Experiment 3 do not provide a clear picture of how the amount of opportunity to process persuasive information affects persuasion. For the most part, the persuasion data seem uninterpretable in theoretical terms and the post hoc methodological interpretation seems quite tenable. Accordingly, a fourth and final experiment was designed to test the information processing model and the role of amount of information processing in persuasion.
The basic intent of Experiment 4 was the same as that of Experiments 2 and 3: to test the information processing model of persuasion, including the full set of hypotheses concerning the effect on persuasion of amount of opportunity to process the persuasive message. On the basis of the preceding discussion of the Experiment 3 results, Experiment 4 incorporated a fundamental change in the manipulation of message exposure duration. Instead of letting the time values of message durations vary from subject to subject in accordance with each subject's estimated reading speed, these values were made constant across subjects. The median $T_{\text{min}}$ estimate of Experiment 3 constituted the $T_{\text{min}}$ duration level for each subject. Use of the median was expected to reduce or eliminate, for at least half of the subjects, the possibility of appraisal of $T_{\text{min}}$ and sub-$T_{\text{min}}$ duration messages. In addition, the use of constant message durations eliminated the need for a reading speed test at the beginning of the experimental session. As a result, subjects (a) received no practice in rapid reading and (b) did not learn the practical meaning of any numerical time value
(i.e., their $T_{\text{min}}$ estimate). These features of the procedure were expected to make it less likely that subjects would learn to effectively read $T_{\text{min}}$ and sub-$T_{\text{min}}$ duration messages and/or develop special strategies for rapid appraisal.

In yet other ways, an overall attempt was made to maximize the sensitivity of Experiment 4 to the effects of changes in amount of information processing. To allow an additional internal replication of each message duration—message quality treatment combination, the message duration level between $T_{\text{min}}$ and the longest duration level was eliminated. In addition, dependent measures were taken in a fixed order (opinion then message validity judgment) to eliminate variability associated with the order factor. Finally, measures of comprehension and amount of processing were taken in order to determine the quantity and quality of processing occurring at each level of message duration.

Method

Subjects

Sixty-one male and female participants provided data. Of these, 27 were introductory psychology students at Ohio State University participating for course credit, and 34 were paid volunteers solicited through an ad in the campus newspaper. The data of one paid subject were discarded because the subject was visibly upset and angry at the experimenter over being unable to locate the laboratory.
Procedure

Manipulation of message exposure duration. The major procedural changes from earlier experiments were in the manipulation of message duration. Three (rather than the usual four) duration levels were defined in time values that were constant across subjects. At the outset of the message sequence, the durations of separately presented arguments were 4.7 sec., 9.5 sec., and 19.0 sec. in the short, intermediate ($T_{\text{min}}$), and long message duration conditions, respectively. The intermediate level equals the median $T_{\text{min}}$ estimate of Experiment 3 and the short and long durations correspond to one-half and twice that value, respectively. Because of the systematic decrease applied to message durations as a function of ordinal position in the message sequence (see Experiment 1, Method section, and Appendix F), the three message duration levels are best described in terms of the range of values they took over the experiment as a whole. These ranges (with averages in parentheses) were (in seconds per argument): short: 2.0 - 4.7(3.3); intermediate: 6.9 - 9.5(8.2); and long: 16.3 - 19.0(17.7).

Persuasive materials. Added to the message set used in Experiment 3 were high and low quality messages for one side of the four original-set topics not used in that experiment. Thus, high and low quality messages on 20 different topics were available for presentation.
Except for different unexpected end-of-session retention tests (see below) and the elimination of the maximum reading speed test, the basic procedure was the same as in earlier experiments. After reading instructions and providing opinion pretest responses, subjects read 3-argument messages and immediately gave opinion posttest (always first) and validity judgment responses on 18 different topics. Message arguments were presented over separate display pages as in Experiment 3. Seven of the 18 messages were repeated in a self-paced presentation (the first one for "practice", the others for measuring repetition reading time) after which subjects again provided opinion and validity judgment responses. In the repetition conditions, the message-to-repetition interval was always 24 display page units, consisting of 6 successive display pages (topic heading page, three message arguments, opinion question, and validity judgment question) concerning each of 4 other messages.

At the end of the message presentation sequence, subjects were given instructions and practice regarding retention questions and then answered retention questions on six earlier messages. This was followed by debriefing (via the computer) and dismissal. Instructions and debriefing materials are printed in Appendix E.
Dependent Measures

In all, 5 different dependent measures were employed. In addition to opinion, message validity judgement, and repetition reading time, measures of two types of message retention were obtained for a subset of the messages in unexpected end-of-session tests.

Message conclusion retention. On the monitor display, the topic issue was restated (e.g., "Should college athletic programs be abandoned?") along with the opposing alternative conclusions (e.g., A. Should be abandoned; B. Should not be abandoned), and subjects were asked to indicate which conclusion the earlier message had recommended. A score of 1 was given if the correct conclusion was chosen and a score of 0 if subjects made the incorrect choice.

Message line recognition. Four separate single lines of text numbered 1 through 4 were presented and subjects were asked to indicate which 2 of the 4 were from an earlier message. The correct lines were either the second or third lines of two of the arguments comprising a target message, whereas the distractor lines were from undisplayed arguments on the same message topic. (Specifically, distractor lines were drawn from the message on the same topic that differed in quality from the target message.) A score of 2, 1, or 0 was assigned corresponding to the number of lines correctly identified.
The message conclusion retention and message line recognition questions were asked contiguously for each of the target messages, with the conclusion retention question coming first. Examples of these retention questions are provided in Appendix A.

Design

The basic design over which opinion change and message validity judgment were observed was a 3 (message duration: short, intermediate, and long -- see above) x 2 (message quality: high or low) x 3 (internal replications) within-subjects factorial, with pretests taken on the opinion measure. Six messages, corresponding to one internal replication of the Message Duration x Message Quality treatment combinations, were repeated to measure repetition reading times. Six other messages, corresponding to another internal replication, served as targets for the end-of-session memory measures. This design was experienced by three replication groups of 20 subjects each (total N = 60), which differed in the treatment sequence order they received. As in Experiment 3, it was necessary to run the replications in temporal succession, and this resulted in some differences between the replication groups in the ratio of paid-to-introductory-psychology-students in a group. These differences did not seem to cause differences in results.
Results

Opinion Change

Overall persuasive impact. The overall pretest-to-posttest opinion change in the factorial treatments was 0.53 units ($F(1,57) = 18.02, p < .001$). Overall, high quality messages produced 1.02 units change, while low quality messages produced 0.04 units change.

Treatment effects. Analysis of variance of pretest-adjusted posttests revealed two significant effects: a main effect for message quality characterized by the expected greater impact of high quality messages ($F(1,57) = 15.31, p < .001$) and a Message Duration x Message Quality interaction ($F(2,56) = 3.83, p < .028$), which is displayed in Figure 16. As can be seen, for high quality messages, persuasion increased as duration increased from short to intermediate, but was unaffected by a further increase in duration ($F(2,56)$ for simple main effect of duration $= 6.25, p < .004$; $F$'s$ (1,57)$ for linear and quadratic components $= 5.55 (p < .022)$ and 4.66 $(p < .035)$ respectively). For low quality messages, opinion change was unaffected by message duration ($F < 1$).

Comparison of opinion change following initial message presentations against opinion change following self-paced message repetitions revealed results that paralleled those in the factorial treatments. Figure 17 presents mean first and second (post-repetition) posttest opinion scores in
Figure 16. Mean estimated opinion change in Experiment 4 as a function of message duration and message quality. Each point is the sum of the mean pretest-adjusted posttest score within a treatment combination added to the average pretest-to-posttest opinion change over all treatments (= 0.53 scale units). Each point is based on 180 observations (3 per subject).
Figure 17. Opinion posttest means in those conditions of Experiment 4 where an opinion response was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message. The means on both posttests are shown, separately for each message duration--message quality treatment combination. High numbers reflect greater agreement with the message (on a 15-point scale). Each point is based on 60 observations (1 per subject).
each of the six different treatments (3 durations by high or low quality). A message repetition significantly altered opinion change only when the initial presentation was short and the message was of high quality, in which case persuasion increased ($F(1,57) = 15.59, p < .001$). A nonsignificant increase was also observed when the initial message was of intermediate duration and high quality ($F(1,57) = 2.12, p < .151$) but elsewhere message repetition had little impact. Thus, as was the case when processing capacity was increased by an increase in message duration, the strongest effect on persuasion of an increase in processing capacity through message repetition occurred when initial capacity was very restricted and the message was of high quality.

Validity Judgments

Figure 18 presents mean message validity judgment as a function of message duration and message quality. Analysis of variance revealed the expected main effect of message quality ($F(1,57) = 66.33, p < .001$), as well as a significant Message Duration x Message Quality interaction ($F(2,56) = 6.15, p < .004$). The pattern displayed in Figure 18 indicates that, for high quality messages, there was no effect of message duration ($F$ for overall simple main effect < 1). For low quality messages, on the other hand, judged validity decreased considerably as duration increased from short to intermediate, but was unaffected by the
Figure 18. Mean message validity judgment in Experiment 4 as a function of message duration and message quality. Judgments were made on a 15-point scale (1 = completely invalid, 15 = completely valid). Each point is based on 180 observations (3 per subject).
further increase in duration ($F(2,56) = 6.18, p < .004$; $F$'s for linear and quadratic trend components $= 3.05 (p < .086)$ and $9.36 (p < .003)$ respectively).

Several unexpected effects also emerged in the analysis. There was a significant main effect of internal replication ($F(2,56) = 3.78, p < .029$), reflecting a tendency for messages of both quality types to receive higher validity ratings in the final set of treatment replications ($M = 8.96$) than either the first ($M = 8.23$) or second set ($M = 8.40$). There was also a Message Duration x Internal Replication interaction ($F(2,56) = 4.66, p < .003$), characterized by a tendency for judged validity to be more positively related to message duration in the third replication set relative to the others (i.e., greater increases with increasing duration in the high message quality treatments, smaller decreases in the low message quality treatments). Finally, a 4-way interaction of message duration, message quality, internal replication, and treatment sequence replication was also observed ($F(8,108) = 3.01, p < .004$), which accounted for much of the variance contributing to a significant multivariate effect for treatment sequence replication ($F(34,82) = 2.18, p < .002$). Close examination of this complex interaction revealed no systematic or readily interpretable trends.

It is not clear why validity ratings were more favorable in the later message presentations (i.e., in the third
internal replication set of treatments) and why this effect was particularly strong in the longer message duration conditions. As would be expected from the hypothesis that appraisal and validity are closely associated, however, a similar, marginally significant trend also was found in the opinion change data: average estimated opinion change increased from .28 to .49 to .74 across the three sequential internal replications ($F(1,57)$ for linear trend = 3.88, $p < .054$). One possible reason for this greater acceptance of both high and low quality messages later in the presentation sequence might be a decrease in subjects' motivation to be critical. Critical thinking involves mental effort, which may have been put forth more readily in response to initial messages and then given way to tedium or impatience. This interpretation, though, must be viewed with caution since (a) no such effects were evident in earlier experiments and (b) if tedium or impatience did occur, there is no compelling reason not to expect these mental states to produce an opposite effect such as blanket rejection of messages.

The effects of message repetition on validity judgments were consistent with the pattern revealed in the factorial analysis of variance. Specifically, an increase in message processing ability, in this case afforded by the repetition, had its strongest effect when it constituted an increase from an initially small amount and when the
message was of low quality. Repetition of a low quality message led to a significant decrease in judged validity when the initial presentation duration was short ($F(1,57) = 9.86, p < .003$) and to a marginally significant decrease when duration was intermediate ($F(1,57) = 3.23, p < .077$). Repetition did not have a significant effect in any other treatment condition, although small, nonsignificant increases were observed for high quality messages initially presented for short and intermediate durations. The repetition effects can be seen in Figure 19, where mean initial and mean post-repetition validity judgments are displayed as a function of initial message duration and message quality.

Repetition Reading Time

Figure 20 presents mean repetition reading time as a function of initial message duration and message quality. Analysis of variance revealed a highly significant main effect for message duration ($F(2,56) = 40.20, p < .001$), reflecting the linear decrease in reading time with increasing message duration that can be seen in Figure 20. Statistically, the linear trend component of the main effect was very strong ($F(1,57) = 81.54, p < .001$) whereas the quadratic component was only marginally significant ($F(1,57) = 3.94, p < .052$). Thus, the data closely resemble those of Experiment 1. A much weaker main effect for message quality also was found ($F(1,57) = 5.17, p < .027$). As can be observed in Figure 20, subjects,
Figure 19. Validity judgment means in those conditions of Experiment 4 where a validity judgment was obtained both after the initial (fixed duration) message presentation and after an untimed repetition of the message. Both judgment means are shown for each message duration-message quality condition. Each point is based on 60 observations (1 per subject).
Figure 20. Mean time spent reading message repetitions in Experiment 4 as a function of duration of initial message presentation and message quality. Reading time scores are sums of the times spent reading three separately presented arguments. Each point is based on 60 observations (1 per subject).
overall, spent slightly more time reading repetitions of low quality messages ($M = 33.33$ sec.) than repetitions of high quality messages ($M = 31.17$ sec.). This overall trend, however, was reversed in the intermediate duration condition, resulting in a significant Message Duration x Message Quality interaction ($F(2,56) = 4.33, p < .018$). Unlike earlier experiments, there were no significant effects associated with the between-subjects treatment sequence replication factor.

In general, the pattern of reading time means are in agreement with the argument made earlier that amount of cognitive processing increases with each successive increment in message duration.

**Message Conclusion Retention**

The proportion of subjects who accurately recalled the conclusion of a message during the end-of-session retention testing is presented in Figure 21 as a function of message duration and message quality. While the overall main effect for duration did not reach a conventional level of significance by analysis of variance ($F(2,56) = 2.49, p < .092$), the linear trend component of this effect was significant ($F(1,57) = 5.05, p < .028$) and reflects a tendency for conclusion memory to be better with longer message durations. In addition, subjects were better able to recall the conclusions of high quality messages (mean
Figure 21. Message retention in Experiment 4. 
(A) Proportion of correct identifications of the message conclusion and (B) mean number of message lines recognized (maximum = 2) as a function of message duration and message quality. Each point is based on 60 observations (1 per subject).
The increasing linear trend over levels of duration conforms to expectations and is generally consistent with the content memory results of Experiments 1 and 2. As for the message quality main effect, one can only speculate. Two possible, nonexclusive, reasons are: (1) subjects had greater difficulty determining the conclusion while reading low quality messages and (2) subjects had more difficulty remembering a message advocacy when it was inconsistent with the message's impact on their opinions, as it would be in the case of the nonpersuasive low quality messages. Either of these possibilities could also explain the message quality effect on repetition reading time reported above.

Message Line Recognition

Figure 21 also presents the mean number of message lines recognized in response to the unexpected end-of-session probes as a function of message duration and message quality. The only significant effect revealed by analysis of variance was a main effect for message duration ($F(2,56) = 24.33, p < .001$). Consistent with the memory data of Experiments 1 and 2, line recognition increased as duration increased only from short to intermediate (both the linear ($F(1,57) = 43.58, p < .001$) and quadratic ($F(1,57) = 13.58, p < .001$) trend components of message
duration were significant). This curvilinear relationship, of course, suggests that comprehension was impaired only in the short message duration condition.

Correlational Analyses

Table 4 presents the within-cell correlations among the various dependent measures. The correlations between validity judgment and pretest-adjusted opinion, as in Experiments 2 and 3, were in most cases significant and of moderate strength. And as in Experiment 2, the weakest correlations occurred in conditions with the shortest message durations.

There were no significant correlations between validity judgment and any of the memory-related variables. Similarly, most of the correlations between pretest-adjusted opinion and these measures were low and nonsignificant, although there was some indication of a small, positive relationship between opinion and conclusion retention when high quality messages were presented for short or intermediate durations. This tendency is consistent with correlational data reported by Baumgardner et al. (1978). Finally, the correlation between conclusion retention and line recognition was nonsignificant in 5 of 6 instances, suggesting either that memories for these two components of the message are independent or that there was insufficient variability in memory performance to detect a relationship.
Table 4

Within-Cell Correlations of Pretest-Adjusted Opinion, Message Validity Judgment, Message Repetition Reading Time, and Indices of Message Retention in Experiment 4

<table>
<thead>
<tr>
<th>Correlation of Pretest-Adjusted Opinion with:</th>
<th>Message Quality</th>
<th>Message Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Short</td>
</tr>
<tr>
<td>Message Validity High</td>
<td>.12&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.37**</td>
</tr>
<tr>
<td>Judgment Low</td>
<td>.25</td>
<td>.37**</td>
</tr>
<tr>
<td>Repetition High</td>
<td>.00&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.09</td>
</tr>
<tr>
<td>Reading Time Low</td>
<td>-.29*</td>
<td>-.03</td>
</tr>
<tr>
<td>Conclusion High</td>
<td>.26*</td>
<td>.41**</td>
</tr>
<tr>
<td>Retention Low</td>
<td>.18</td>
<td>-.23</td>
</tr>
<tr>
<td>Line High</td>
<td>.19</td>
<td>.21</td>
</tr>
<tr>
<td>Recognition Low</td>
<td>-.01</td>
<td>-.24</td>
</tr>
</tbody>
</table>

| Correlation of Message Validity Judgment with: | |
|---------------------------------------------|-----------------|-----------------|
| | Repetition High | -.12<sup>b</sup> | -.07 | -.01 |
| Reading Time Low | -.12 | .03 | .00 |
| Conclusion High | .08 | .19 | -.13 |
| Retention Low | .25 | -.01 | -.05 |
| Line High | -.04 | .16 | .17 |
| Recognition Low | .04 | -.14 | -.24 |
Table 4 (continued)

<table>
<thead>
<tr>
<th>Message Quality</th>
<th>Message Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short</td>
</tr>
<tr>
<td>Correlation of Conclusion High</td>
<td>.22</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Line Recognition</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Each correlation is based on 60 pairs of scores

a Each opinion-validity judgment correlation is an average of three correlations observed in the three internal replications of the particular duration-quality treatment combination.

b Negative correlations between opinion and repetition reading time and between validity judgment and repetition reading time indicate positive relationships between amount of information processing and opinion and between amount of information processing and validity judgment.

*\( p < .05, **p < .01, ***p < .001 \)
Discussion

The persuasion and validity judgment patterns of Experiment 4 can be summarized as follows. Message duration, in the case of high quality messages, affected persuasion much as in Experiment 1. Opinion change increased notably as duration was increased from a sub- to full-comprehension level, but was unaffected overall by a further increase in duration. Validity judgments of high quality messages were not significantly influenced by duration. In the case of low quality messages, persuasive impact was unaffected overall by variation in message duration, while judged validity decreased considerably between the short and intermediate duration levels. Overall, the pattern involving low quality messages resembled that of Experiment 3.

These data patterns do not conform in all cases to the hypotheses derived from the model that has guided this dissertation. In the following paragraphs, therefore, the discrepancies between predicted and obtained results, and some potential reasons for them, are briefly discussed. Then, some further data analyses are reported which attempt to provide an understanding of the data patterns as a whole and their implications for the information processing theory.

One discrepancy between predictions and results involves the effect of increasing duration from short to intermediate in the low message quality conditions. The
model predicts that persuasion should increase but the data show no opinion change effect and a large decrease in judged message validity. The discrepancy can be understood, however, when one considers that the theoretical prediction involves the assumption that the increase in duration under consideration produces an increase in comprehension but is insufficient to allow a meaningful amount of appraisal processing. The decrease in judged validity itself, though, is a strong indication that some appraisal was possible in the intermediate duration conditions. Apparently, the appraisal was enough to allow recognition of the poor quality of the message and to accordingly cancel any persuasion-enhancing effect of complete comprehension.

A more troublesome discrepancy between predictions and results is the consistent lack of any observable effects on persuasion and validity judgments due to an increase in message duration beyond the intermediate duration level. This pattern is similar to the persuasion pattern of Experiment 1, but is inconsistent with the theory-supportive results of Experiment 2 (persuasion and validity judgments) and Experiment 3 (validity judgments of low quality messages only). The lack of effects of increasing duration from intermediate to long is puzzling in light of the repetition reading time data. The linear decrease (see Figure 20) in repetition reading time across the full range of manipulated durations is a strong indication that greater
message processing occurred in the long duration condition relative to the intermediate duration condition. At least for the present experiment, this contradicts the idea of a weak duration-processing relationship in the post-$T_{\text{min}}$ range of duration that was discussed in the previous chapter.

While there is clear evidence that message processing was a linear function of message duration, it may be the case that the additional appraisal produced by the increment in exposure duration beyond the intermediate level was insufficient to affect the persuasion process in ways that were detectable with the validity judgment and opinion change measures. On the other hand, there may have been persuasion effects that could not be observed. For example, increased appraisal processing of high quality messages, and the evaluatively consistent thoughts it was expected to yield, may have increased resistance to counterpersuasion or otherwise increased overall confidence in post-message opinion without at the same time causing the recipient to adopt a more extreme position. This possibility suggests that future research examine resistance to counterpropaganda and confidence in post-message opinion as a function of message exposure duration.

Another potential explanation of the lack of post-intermediate-duration persuasion effects is that the long duration condition elicited psychological processes besides
evaluatively consistent message and topic appraisal. One such process might be psychological reactance (Brehm, 1972). Miller (1976), for example, found a curvilinear relationship between amount of exposure to advertising campaign posters and persuasion, such that, as exposure increased, persuasion first increased and then decreased. Miller attributed this to a psychological reactance process in which recipients began to view the manipulation of exposure as an infringement on their freedom to decide for themselves and accordingly reasserted their freedom by rejecting the message. In the present experiment, the longest duration was about twice as long as most subjects needed to read the message and fully understand it, so it is at least conceivable that sufficient reactance was elicited to cancel the effects of increasing message appraisal. This reactance, it should be noted, could have taken the form of decreased acceptance in the case of high quality messages and less rejection in the case of low quality messages. The latter relationship could have occurred to the extent that subjects were reacting against the rather blatant and deliberate absurdity of some low quality message arguments.

A second counter-process that may have been elicited by long message duration is satiation, characterized by an inability to generate additional evaluatively consistent thoughts. Subjects may have exhausted the pool of such thoughts that readily came to mind, and have begun to
generate some thoughts that were inconsistent with the dominant appraisal response. While this notion is inconsistent with the principle of evaluative consistency, it seems plausible enough to warrant attention in future research.

The foregoing reasons offered for the lack of persuasion effects over the post-\(T_{min}\) range of message duration do not lend themselves to any verification using the present data. Therefore, a satisfactory understanding of how persuasion varies over a full range of message duration will require additional research. However, information on other important aspects of the persuasion process might be gleaned by a closer examination of the data of Experiment 4. Given the multiple dependent measures taken, it is possible to obtain further information on how the independent variables generally affected the persuasion process through the use of correlational techniques designed to trace plausible causal connections among independent, intervening, and end-response variables. The remainder of this chapter presents the results of two such analyses and some subsequent conclusions regarding information processing in persuasion. The first analysis concentrates on the strong persuasion effects of message quality and the second on the central variable of this dissertation—message exposure duration.
Message Quality and the Mediating Role of Appraisal

The mediating role of appraisal or "cognitive reactions" is the most fundamental principle of both the information processing theory and the general cognitive response approach to persuasion. The present research has attempted to test this mediating role in two ways: (1) by measuring judged message validity, which is one important component of appraisal and (2) by assessing the persuasion effects of appraisal set (Experiment 2) and message quality (Experiments 3 and 4), variables that logically and theoretically are more likely to influence appraisal than comprehension.

For the most part, the data patterns reported above make a strong case for the mediation of appraisal. In all relevant experiments, the appraisal manipulation had a strong effect on both opinion change and message validity judgments. The best evidence comes from Experiment 4. Figure 16 shows that under conditions of incomplete comprehension (short message duration), message quality had no effect on persuasion. When full comprehension was possible (intermediate and long duration), however, quality had a profound effect. Although their content was learned, low quality messages, unlike their high quality counterparts, had little or no persuasive impact. This certainly suggests that subjects evaluated the message information against their own knowledge and based their opinion responses on the outcome of this appraisal.
Additional support for this conclusion comes from the fair degree of correspondence between the patterns of opinion change and the patterns of validity judgments. Where message quality affected persuasion, it generally also affected message validity judgments. Similarly, where increases in message duration resulted in significantly increased opinion change in Experiment 2, there were accompanying significant increases in judged validity.

To say that appraisal mediates the effects of message variables implies the causal relationship depicted in Figure 22. According to the information processing model, message validity judgment, the present measure of appraisal outcome, is an intervening variable that is directly affected by message quality, particularly at longer message duration levels (i.e., the Quality x Duration interaction). In turn, the judgment of message validity (in combination with other unmeasured aspects of appraisal) determines the amount of persuasion. The independent variables, then, are presumed to affect persuasion only indirectly, through their influence on the judgment of message validity and possibly other thoughts derived from appraisal processing that are highly correlated with the validity judgment (through the principle of evaluative consistency).

This causal assertion can be tested using an adaptation of Blalock's (1964) method for testing causal models with correlational data. Basically, Blalock's procedure
Figure 22. Theoretical causal relationship assumed to underlie the message quality effects of Experiment 4.
is to partial out statistically the postulated mediator (B) between an independent variable (A) and a final dependent variable (C), with the expectation that the relationship between A and C will be zero if the effects of B are removed. The application of such a procedure to situations like the present one, where the independent variables have been manipulated experimentally, has been recommended by Kenny (1976), and an example of its use in a persuasion experiment can be found in the earlier referenced study on distraction by Insko, Turnbull, & Yandell (1974). To implement this procedure in the present case, analysis of covariance (which was used in the Insko et al. application) was used on the data of Experiment 4 to examine changes in effects of the independent variables on opinion change when the effects of validity judgment are held constant. While such covarying of validity judgments would appear to break the rule that the covariate should not be caused by the independent variables, Kenny (1976) has noted that this rule applies mainly to another use of analysis of covariance, namely that of increasing power. The present use is to control for a mediating variable and, as such, it is equivalent to the examination of partial slopes in regression analysis (cf. Sheffe', 1959).

The results of the covariance analysis were as follows. Before variance due to validity judgment is removed, the main effect of message quality on pretest-adjusted opinion
yields an $F(1,57)$ of 15.31 ($p < .001$) and the interaction of quality and message duration yields an $F(2,56)$ of 3.83 ($p < .028$). When message validity judgment is covaried, the corresponding $F$'s (d.f.'s = 1,56 and 2,54) are reduced to the nonsignificant levels of 1.64 ($p > .20$) and 2.22 ($p > .11$), respectively. (On the other hand, covarying pretest-adjusted opinion from the effects of the independent variables on judged validity—and thereby assessing a causal link going from independent variables to opinion change to message validity judgment—yields no such reduction to nonsignificance. The quality and Quality x Duration $F$'s remain highly significant: The original $F$'s are 66.33 ($p < .001$) and 6.15 ($p < .004$) while the covariance $F$'s are 42.30 ($p < .001$) and 4.35 ($p < .018$).

The covariance analysis thus provides additional statistical evidence of the mediational role of appraisal. It is apparent from this analysis that the outcome of appraisal processing is a determinant, rather than a result or simply a correlate, of persuasion.

Message Exposure Duration and Its Effects on the Persuasion Process—A Path Analysis

In Experiment 4 (as well as in earlier experiments), message duration had reliable effects on several different dependent variables. Univariate analyses revealed that it influenced opinion change, message validity judgment, reading time for message repetitions, and two indices of
message comprehension. Such independent analyses, though, say little about the interrelationships among these variables. These interrelationships, particularly the causal ones, are the focus of the analysis reported in this section.

The information processing theory, of course, predicts that the several dependent variables, or, more aptly, the conceptual variables that they represent, are interrelated in specific, causal ways. The complete set of causal relationships are shown in Panel A of Figure 23 in the form of a path diagram. (Each variable is also assumed to have unmeasured causes that are unrelated to the remaining variables in the model. For clarity, these residual causes are not included in the diagram.) As can be seen, the model predicts that message duration has direct effects on message comprehension and on the total message processing (appraisal processing in addition to comprehension, as presumably measured by repetition reading time) that occurs. Comprehension and total processing, in turn, directly influence the judgment of message validity, since the primary cognitive product of comprehension and appraisal processing is a set of message- and topic-relevant thoughts. In addition, the recipient's premessage opinion (pretest opinion) is predicted to have a direct influence on the message validity judgment, since the recipient's own opinion should be related to the memory-based thoughts against which the
Figure 23. Alternative causal models of the persuasion process mediating the effects of message duration.
message arguments may be compared. The final dependent variable in the model, postmessage or posttest opinion, is assumed to be influenced by pretest opinion, the message validity judgment (as was demonstrated in the covariance analysis presented above), and total message processing. The direct causal link from total processing to posttest opinion represents the hypothesis that appraisal processing typically should yield some cognitive reactions that are relevant to the persuasion topic, but that do not bear directly on the judgment of the message's validity.

Basically, then, the diagrammed model depicts the stage conceptualization outlined in the introductory chapter, in terms of the variables measured in Experiment 4. Persuasion is seen to involve the encoding processes of comprehension and appraisal, which yield a set of message- and/or topic-relevant evaluative thoughts which, finally, form the basis of a postmessage opinion. It is noteworthy that, as conveyed in the path diagram, message duration only indirectly affects posttest opinion through its effects on the prior encoding processes. Similarly, comprehension only has an indirect effect on posttest opinion via its role as a provider of message information relevant to a validity judgment (which in turn directly influences opinion).

The information processing model may be contrasted with two alternative models diagrammed in the lower panels of Figure 23. These are the strict learning theory and strict
cognitive response models that were reviewed in the introductory chapter. The learning theory model differs from the information processing model primarily in that it assumes a direct link between message comprehension and posttest opinion and no link between message validity judgment and posttest opinion. The latter two variables are assumed to be related only in that they have a common cause, message comprehension. The strict learning theory model also assumes no link between total processing and posttest opinion, since appraisal processing is not considered a mediating activity. The strict cognitive response model contrasts sharply with both the learning theory model and the information processing model in its treatment of comprehension, in that it assumes neither a direct nor indirect link between comprehension and posttest opinion.

Path analysis: an overview. In order to test the adequacy of the information processing model and the alternative models, and thereby also gain an overall picture of the effects of message duration, the regression technique known as path analysis was applied to a portion of the data of Experiment 4. Path analysis (cf. Billings & Wroten, 1978; Kerlinger & Pedhazur, 1973; Land, 1969) uses ordinary least squares regression to provide information on the accuracy of hypothesized causal relationships among a set of variables. Basically, path analysis involves two steps. First, path coefficients from hypothesized causes
to hypothesized effects are computed. A path coefficient ($p$) indicates the direct effect of one variable on another and usually takes the form of a standardized regression coefficient. For example, in the information processing model depicted in Panel A of Figure 23, posttest opinion (variable 6) is regressed on pretest opinion (2), validity judgment (5), and total processing (4) in order to obtain the path (standardized regression) coefficients from 2 to 6 ($p_{62}$), 5 to 6 ($p_{65}$), and 4 to 6 ($p_{64}$). Once the path coefficients are computed in this way for all the causal links in the model, each coefficient can be examined for size and statistical significance. Paths having small and/or statistically nonsignificant path coefficients can then be deleted from the model or otherwise taken as an indication of the weak aspects of the theory.

By computing the path coefficients for each causal link in the model, it also is possible to determine the indirect effects relating any two variables in addition to the direct causal effect. Furthermore, both causal and non-causal indirect effects can be determined. For example, total processing (4) is assumed in the information processing model to have both a direct and indirect (through validity judgement (5)) causal effect on posttest opinion. In addition, total processing and posttest opinion are related in that they each ultimately have a common cause, message duration (1). In the path analysis, the direct
causal effect is given by the path coefficient, $p_{64}$, the indirect causal effect corresponds to the product, $p_{65} \times p_{54}$, and the indirect noncausal relationship corresponds to the product, $p_{65} \times p_{53} \times p_{31} \times p_{41}$.

The second step in path analysis involves an assessment of the overall adequacy of the model by comparing the actual observed correlations among the variables in the model with the predicted correlations given the accuracy of the model. The predicted correlation between any two variables is the sum of the direct and indirect connections between those variables as measured by the path coefficients and their products. If the model is accurate, the observed and predicted correlations should be identical or close to identical.

The assumptions underlying the use of path analysis are as follows: (1) the relations among the variables are linear and additive; (2) there is a one-way causal flow in the model such that if A causes B, B cannot also cause A; (3) the variables are measured on an interval scale; and (4) residual causes of variables (causes outside of the model) are not correlated among themselves or with other variables in the model. The potential consequences of violating these assumptions are discussed by Billings & Wroten (1978).

The path analysis of the present data. The effects of message quality on validity judgments and posttest opinion
do not combine with the effects of message duration and total processing on these variables in an addictive fashion. As predicted by the model and observed in earlier analyses, message quality interacts with duration and amount of processing. Accordingly (as can be seen in Figure 23), it was necessary to exclude message quality from the causal model and to perform the path analysis within levels of quality. The path analysis, therefore, was performed first on the data from high quality message conditions. Then, for comparison, the same analysis was applied to data from the low message quality conditions.

In the analysis, message duration levels were dummy-coded as 1, 2, or 4 for short, intermediate, and long duration, respectively. Scores on the message line recognition and message conclusion retention tests were summed to create a composite measure of message comprehension. The total processing variable was operationalized as message repetition reading time subtracted from a constant in order to make higher numbers reflect greater processing of the initial message. Finally, pretest opinion, validity judgment, and posttest opinion took on their actual values in the analysis.

It will be recalled that the comprehension data and total processing data were obtained for only one third of the messages in Experiment 4 (i.e., one internal replication). Furthermore, these two sets of data were obtained
from different thirds. These design characteristics imposed some constraints on the amount and type of data that could be examined. The major path-analytic examination was confined to the data of the third internal replication of Experiment 4, which included the comprehension measures (the total number of observations was therefore 180—60 subjects x 3 duration levels). The path analysis of this replication was conducted on the basis of a path model in which all links were the same as those depicted in the information processing model of Figure 23, except that the total processing variable was excluded. Then, in order to determine the path coefficients involving total processing, the necessary regressions involving this variable were performed, using data from the second internal replication, which included repetition reading time data. (For example, to compute the path coefficient from total processing to posttest opinion, the posttest opinion scores of the second internal replication were regressed on total processing as well as the validity judgment and pretest opinion scores of the same replication.) The major shortcoming of this procedure is that the regressions of validity judgment (and, in a later analysis, posttest opinion) on its predictors did not include total processing and comprehension together as predictors. Thus, it was impossible to determine the path coefficient from each of
these variables to validity judgment while holding the other variable constant. Still, it was considered useful to attempt to assess the causal connections involving both total processing and comprehension, rather than including only one of these variables in the model.

It should be noted, finally, that the validity judgment data from the third internal replication of Experiment 4 differed somewhat from the experiment-wide validity judgment data pattern. As reported and described in the Results section, there was a significant internal replication main effect and a significant Message Duration x Internal Replication interaction on this measure. In the third replication, relative to the experiment as a whole, there was a stronger positive message quality-validity judgment relationship in the high message quality condition and a weaker negative relationship in the low message quality condition. These discrepancies should be considered, then, in judging the generality of the following analysis.

Results of the path analysis for high quality messages. For the information processing model depicted in Panel A of Figure 23, path coefficients were obtained by the regression of each effect on only the variables postulated to be immediate causes of each effect. The results of this analysis are shown in Panel A of Figure 24. All but two of the path coefficients are statistically significant. One
A. ORIGINAL INFORMATION PROCESSING MODEL

B. REVISED INFORMATION PROCESSING MODEL
(HIGH MESSAGE QUALITY CONDITION)

Figure 24. Results of path analysis of the high message quality condition of Experiment 4. (A) Results of analysis of the information processing model given in Figure 23; (B) Results of analysis of a revised model. Path coefficients with a single asterisk are significant beyond the .05 level. Two asterisks indicate significance beyond the .01 level, and three indicate significance beyond the .001 level.
nonsignificant path coefficient, that from total processing to validity judgment was both nonsignificant and of trivial size (.027). The other, from total processing to posttest opinion was marginally significant ($p < .10$) and of a somewhat more meaningful size (.096). On the basis of these results, it was decided that, in revising the model, only the path from total processing to validity judgment should be deleted.\(^6\)

On examination of the predicted correlation coefficients determined by adding the direct and indirect effects among each pair of variables, three large discrepancies between the predicted and observed correlations were discovered. On the basis of the model, the expected correlation between duration and validity judgment is $r = \rho_{53}p_{31} + \rho_{54}p_{41} = (.162)(.275) + (.027)(.368) = .059$. The actual correlation, however, was .216. Similarly, the predicted correlation between comprehension and posttest opinion is:

$$r = \rho_{65}p_{53} + \rho_{64}p_{41}p_{31} + \rho_{65}p_{54}p_{41}p_{31}$$

$$= (.373)(.162) + (.096)(.368)(.275) + (.373)(.027)(.368)(.275)$$

$$= .071,$$

whereas the observed correlation was .282. Finally, the predicted correlation between total processing and pretest opinion is zero, since these variables are linked neither directly nor indirectly in the model. Their actual correlation, however, was +.139. These discrepancies indicate
that, for each of these pairs of variables, the hypothesized indirect causal links (or absence of links) between the variables do not account for their total covariation. Accordingly, the model was revised by including direct paths from duration to validity judgment, from comprehension to posttest opinion, and from pretest opinion to total processing. The theoretical significance of these paths will be discussed when the final revised model is evaluated.

The revised model is presented in Panel B, Figure 24 complete with the obtained path coefficients from a second path analysis. As can be seen, all of the added paths are of moderate size and two of the three are statistically significant (the path from pretest to total processing is marginally significant at $p < .07$). One effect of adding duration as a direct cause of validity judgment was to reduce the path coefficient from comprehension to validity judgment to a nonsignificant level ($p < .20$). However, using a criterion of practical significance, the size of this path coefficient (.109) was considered large enough to retain the path in the model.

Table 5 shows the predicted correlations between all possible pairs of variables and their decomposition into direct and indirect effects, along with the observed correlations for comparison. As shown in the table, all of the correlations predicted by the revised model are very close to the observed correlations in magnitude. In fact,
Table 5

Observed Correlations, Predicted Correlations, and the Decomposition of Predicted Correlations in the Path Analysis of Experiment 4 Data

(High Message Quality Condition)

<table>
<thead>
<tr>
<th>Variable Pair</th>
<th>Indirect Correlation</th>
<th>Predicted Correlation</th>
<th>Observed Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 $p_{31}$</td>
<td>$-$</td>
<td>$.000</td>
<td>$.015</td>
</tr>
<tr>
<td>(.275)</td>
<td></td>
<td>(.275)</td>
<td>.275</td>
</tr>
<tr>
<td>14 $p_{41}$</td>
<td>$-$</td>
<td>$.364</td>
<td>.368</td>
</tr>
<tr>
<td>(.364)</td>
<td></td>
<td>(.364)</td>
<td>.364</td>
</tr>
<tr>
<td>15 $p_{51}$</td>
<td>$p_{51}p_{31}$</td>
<td>$.220</td>
<td>.216</td>
</tr>
<tr>
<td>(.190)</td>
<td></td>
<td>(.190)</td>
<td>.190</td>
</tr>
<tr>
<td>16 $-$</td>
<td>$p_{61}p_{31} + p_{61}p_{51} +$</td>
<td>$.166</td>
<td>.124</td>
</tr>
<tr>
<td>$p_{61}p_{31}^2 + p_{61}p_{41}$</td>
<td>(.010)</td>
<td>(.010)</td>
<td>.010</td>
</tr>
<tr>
<td>.035</td>
<td></td>
<td>(.035)</td>
<td>.035</td>
</tr>
<tr>
<td>23 $-$</td>
<td>$-$</td>
<td>$.000</td>
<td>.022</td>
</tr>
<tr>
<td>$-$</td>
<td></td>
<td>(.289)</td>
<td>.289</td>
</tr>
<tr>
<td>24 $p_{42}$</td>
<td>$-$</td>
<td>$.129</td>
<td>.139</td>
</tr>
<tr>
<td>(.294)</td>
<td></td>
<td>(.294)</td>
<td>.294</td>
</tr>
<tr>
<td>25 $p_{52}$</td>
<td>$-$</td>
<td>$.247</td>
<td>.246</td>
</tr>
<tr>
<td>(.247)</td>
<td></td>
<td>(.247)</td>
<td>.247</td>
</tr>
<tr>
<td>26 $p_{62}$</td>
<td>$p_{62}p_{42} + p_{62}p_{52}$</td>
<td>$.582</td>
<td>.574</td>
</tr>
<tr>
<td>(.487)</td>
<td>(.082)</td>
<td>(.082)</td>
<td>.082</td>
</tr>
<tr>
<td>34 $-$</td>
<td>$p_{31}p_{41}$</td>
<td>$.100</td>
<td>.167</td>
</tr>
<tr>
<td>(.100)</td>
<td></td>
<td>(.100)</td>
<td>.100</td>
</tr>
<tr>
<td>35 $p_{53}$</td>
<td>$p_{51}p_{31}$</td>
<td>$.161</td>
<td>.167</td>
</tr>
<tr>
<td>(.109)</td>
<td></td>
<td>(.109)</td>
<td>.109</td>
</tr>
<tr>
<td>36 $p_{63}$</td>
<td>$p_{63}p_{53} + p_{63}p_{51}p_{31} +$</td>
<td>$.281</td>
<td>.282</td>
</tr>
<tr>
<td>(.216)</td>
<td>(.037)</td>
<td>(.037)</td>
<td>.037</td>
</tr>
<tr>
<td>45 $-$</td>
<td>$p_{42}p_{52} + p_{41}p_{51}$</td>
<td>$.102</td>
<td>.056</td>
</tr>
<tr>
<td>$-$</td>
<td>(.032)</td>
<td>(.032)</td>
<td>.032</td>
</tr>
<tr>
<td>46 $p_{64}$</td>
<td>$p_{64}p_{54}p_{41} +$</td>
<td>$.204</td>
<td>.187</td>
</tr>
<tr>
<td>(.096)</td>
<td>(.022)</td>
<td>(.022)</td>
<td>.022</td>
</tr>
<tr>
<td>56 $p_{65}$</td>
<td>$p_{53}p_{63} + p_{52}p_{62} +$</td>
<td>$.497</td>
<td>.491</td>
</tr>
<tr>
<td>(.335)</td>
<td>(.024)</td>
<td>(.024)</td>
<td>.024</td>
</tr>
</tbody>
</table>

Note: Variable 1 = Message Duration; Variable 2 = Pretest Opinion; Variable 3 = Message Comprehension; Variable 4 = Total Message Processing; Variable 5 = Message Validity Judgment; Variable 6 = Posttest Opinion.

When a variable has a single direct cause, the path coefficient between that variable and its cause is equal to the zero-order correlation between the two variables. Thus, for the variable pair 13, the predicted and observed correlations are necessarily equal.

Since comprehension and repetition reading time were not measured for the same messages, this correlation could not be computed.
applying the common rule of thumb that a discrepancy should be no larger than .05 (Kerlinger & Pedhazur, 1973), every comparison is acceptable.

Thus, although a few path coefficients do not reach conventional levels of statistical significance, it is clear that the revised information processing model, according to the path analysis, fits the data quite well. It is reasonable to believe, therefore, that the model provides accurate information about the effects of message duration on the persuasion process when message quality was high. The model retains several central causal relationships from the initial information processing model, but it also reflects some causal relationships that fall outside the original conceptualization. The key findings are as follows.

1. The stage process assumed by the information processing theory is evident in the apparent causal sequences from duration-to-comprehension-to-validity-judgment-to-posttest-opinion and from duration-to-total-processing-to-posttest opinion. However, the absence of a direct causal link from total processing to validity judgment and the presence of a direct link from duration to validity judgment do not fit the original version of this conceptualization. Taken together, these latter outcomes may indicate primarily that the repetition reading time measure of total processing did not account for all of the variation in appraisal processing produced by the message duration manipulation.
In particular, it may not have accounted for the variation directly related to validity judgment. The direct link from duration to validity judgment, though, indicates that validity judgment was indeed related to some other cognitive consequence of processing ability besides comprehension. Perhaps additional indices of total processing, such as the total number of thoughts subjects report having had during exposure to the message, would show a causal link to validity judgment.

The relationship between duration and validity judgment with comprehension held constant is particularly noteworthy in that it provides some evidence that appraisal outcome is related to amount of appraisal processing. Such an inference, however, seems contrary to the lack of validity judgment and persuasion effects after duration exceeded the intermediate level. Perhaps the amount of processing effect is strongest at the lower end of the message duration range, such as that from sub-comprehension to slightly longer than $T_{\text{min}}$ (which the intermediate duration may have turned out to be). Of course, it alternatively may be the case that the duration-to-validity judgment path reflects a comprehension effect that was not measured by the comprehension measures used.

2. Message comprehension had a direct effect on post-test opinion in addition to its predicted indirect effect through validity judgment. This direct causal link is an
important departure from the initial model. It indicates that, once message arguments are understood and enter the category of salient topic-relevant thoughts, they may have an impact on the opinion judgment independent of whether or not they receive highly favorable or detailed appraisal. It may be that, unless the validity judgment is negative enough for complete rejection, the message arguments are added to the message recipient's pool of salient message-favorable thoughts and so exert a direct influence on opinion at the integration stage.

The direct comprehension-to-posttest-opinion link, of course, is totally incompatible with the strict cognitive response model diagrammed in Figure 23. In fact, path analytic examination of this model revealed a large discrepancy between the predicted and observed correlations between comprehension and posttest. Since the only hypothesized relationship between these variables is the indirect effect of their mutual dependence on message duration, the strict cognitive response model predicts a trivial comprehension-posttest opinion correlation of .001, which contrasts sharply with the observed correlation of .282.

3. Consistent with the information processing theory, validity judgment had a direct causal effect on posttest opinion and was itself a direct effect of pretest opinion, message duration, and comprehension. Thus, the analysis
concurs with the earlier analysis of message quality in demonstrating the role of message appraisal as a mediator of persuasion. The direct link from validity judgment to posttest opinion also disconfirms the strict learning model depicted in Figure 23. This model predicts that the total covariation between validity judgment and posttest opinion is spurious, being due solely to their sharing the common causes of pretest opinion and comprehension. The correlation that this model would predict from a path analysis of the present data is about .180, whereas the actual correlation between validity judgment and posttest opinion is .491.

4. Pretest opinion directly influenced the appraisal process. Besides the direct pretest opinion to validity judgment link predicted by the information processing theory as discussed earlier, pretest opinion appears to have had some direct effect on the amount of message processing (i.e., its direct link with total processing). While too much confidence should not be placed in this marginally significant effect, it can be noted briefly that such an effect resembles a selective attention relationship in which proattitudinal information is processed more fully. Although motivational factors might play a role, this relationship could be explained in information processing terms by assuming that thought production is facilitated when initial opinion is consistent with the arguments of high quality messages.
Results of the path analysis for low quality messages. After nonsupportive path-analytic tests of the models shown in Figure 23, the low message quality data were subjected to a path analysis based on the revised information processing model supported by the analysis of high message quality data. In this analysis, pretest opinion, posttest opinion, and validity judgment scores were reversed so that the predicted negative effects of message duration and message processing would be reflected by positive path coefficients. The results of the path analysis are shown in the upper panel of Figure 25. As can be seen, the model does quite poorly with these data. Accordingly, the model was trimmed by deleting all of the nonsignificant paths except the one from comprehension to validity judgment, which was retained because its size (0.098) was considered practically important. The so-revised model, along with the path coefficients of a second path analysis, is presented in the lower panel of Figure 25. The predicted and obtained correlations are given in Table 6. It can be seen that three of the correlations predicted by the revised model are discrepant from the observed correlations by more than 0.05. However, none of these "large" discrepancies miss the critical value by much, the largest being 0.079.

It thus seems that the model that most adequately fits the low message quality data is a different one than that supported by the high message quality data. This suggests
A. REVISED INFORMATION PROCESSING MODEL (DERIVED FROM (PREVIOUS ANALYSIS OF THE HIGH MESSAGE QUALITY DATA)

B. ADDITIONALLY REVISED INFORMATION PROCESSING MODEL (LOW MESSAGE QUALITY CONDITION)

Figure 25. Results of path analysis of the low message quality condition of Experiment 4. (A) Results of analysis of the revised information processing model that was derived through analysis of the high message quality condition. (B) Results of analysis of an additionally revised model. Path coefficients with a single asterisk are significant beyond the .05 level. Two asterisks indicate significance beyond the .01 level, and three indicate significance beyond the .001 level.
Table 6

Observed Correlations, Predicted Correlations, and the Decomposition of Predicted Correlations in the Path Analysis of Experiment 4 Data

(Low Message Quality Condition)

<table>
<thead>
<tr>
<th>Variable Pair</th>
<th>Direct Effect</th>
<th>Indirect Effects</th>
<th>Predicted Correlation</th>
<th>Observed Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>--</td>
<td>--</td>
<td>.000</td>
<td>-.045</td>
</tr>
<tr>
<td>13</td>
<td>p31 (0.328)</td>
<td>--</td>
<td>.328</td>
<td>.328^a</td>
</tr>
<tr>
<td>14</td>
<td>p41 (0.285)</td>
<td>--</td>
<td>.285</td>
<td>.285^a</td>
</tr>
<tr>
<td>15</td>
<td>--</td>
<td>p53p31 (0.027)</td>
<td>.027</td>
<td>-.008</td>
</tr>
<tr>
<td>16</td>
<td>--</td>
<td>p65p53p31 (0.007)</td>
<td>.007</td>
<td>.033</td>
</tr>
<tr>
<td>23</td>
<td>--</td>
<td>--</td>
<td>.000</td>
<td>-.079</td>
</tr>
<tr>
<td>24</td>
<td>--</td>
<td>--</td>
<td>.000</td>
<td>.005</td>
</tr>
<tr>
<td>25</td>
<td>p52 (0.210)</td>
<td>--</td>
<td>.210</td>
<td>.210</td>
</tr>
<tr>
<td>26</td>
<td>p62 (0.625)</td>
<td>p65p52 (0.056)</td>
<td>.681</td>
<td>.681</td>
</tr>
<tr>
<td>34</td>
<td>--</td>
<td>p31p41 (0.093)</td>
<td>.093</td>
<td>--b</td>
</tr>
<tr>
<td>35</td>
<td>p53 (0.081)</td>
<td>--</td>
<td>.081</td>
<td>.064</td>
</tr>
<tr>
<td>36</td>
<td>--</td>
<td>p65p53 (0.022)</td>
<td>.022</td>
<td>-.047</td>
</tr>
<tr>
<td>45</td>
<td>--</td>
<td>p53p31p41 (0.008)</td>
<td>.008</td>
<td>.031</td>
</tr>
<tr>
<td>46</td>
<td>--</td>
<td>p65p53p31p41 (0.002)</td>
<td>.002</td>
<td>-.061</td>
</tr>
<tr>
<td>56</td>
<td>p65 (0.268)</td>
<td>p52p62 (0.131)</td>
<td>.399</td>
<td>.399</td>
</tr>
</tbody>
</table>

Note: Variable 1 = Message Duration; Variable 2 = Pretest Opinion; Variable 3 = Message Comprehension; Variable 4 = Total Message Processing; Variable 5 = Message Validity Judgment; Variable 6 = Posttest Opinion.

^a When a variable has a single direct cause, the path coefficient between that variable and its cause is equal to the zero-order correlation between the two variables. Thus, for the variable pairs 13 and 14, the predicted and observed correlations are necessarily equal.

^b Since comprehension and repetition reading time were not measured for the same messages, this correlation could not be computed.
that the process leading to a posttest opinion was somewhat different as a function of message quality. However, it must be noted that the data on which the path analysis for low quality messages was performed (i.e., the data from the third internal replication) were characterized by very small overall relationships between message duration and persuasion and, in contrast to the experiment-wide data, between message duration and validity judgment. Thus, the resultant path model may not be fully generalizable to the situation in which message duration has robust effects. With this caution in mind, it can be noted that, though different from the high message quality case, the low message quality model nonetheless reflects the more basic assumptions of the information processing theory (e.g., the stage process and the strong effect of validity judgment on posttest opinion). The major differences from the high message quality model are the absence of any direct effects of total processing or comprehension on posttest opinion and the absence of any link between message duration and validity judgment other than through comprehension. A reasonable interpretation of these findings is that the low quality messages were so poor that it took little message processing beyond comprehension to discover the poor quality. Hence, some necessary degree of comprehension was probably the sole prerequisite of an unfavorable message validity judgment. This would explain the lack of effects due to total processing in that
messages would have been unpersuasive with minimum processing as well as with greater amounts. And the lack of a direct effect of comprehension on posttest opinion is understandable in that, to the extent that message arguments could be rejected on the basis of little appraisal, they would not remain among the salient message-relevant thoughts of the recipient.
Consistent with the goals of this dissertation that were stated in the first chapter, the conclusions to be drawn from the experiments can be grouped into two categories: (a) those regarding the information processing model of persuasion and (b) those concerned with the major independent variable, message exposure duration.

The Information Processing Model of Persuasion

The experiments rather clearly show that both message comprehension and appraisal (or "cognitive responses", to use the more traditional term) are important cognitive mediators of the effects of message variables on persuasion. Regarding comprehension, three experiments found that increasing the duration of a reasonable message from a sub- to full-comprehension level increased both persuasion and measured message memory. The path analysis of Experiment 4 data, in addition, gave support to a model in which comprehension was a direct cause of both judgments of message validity and post-message opinion. The mediating role of appraisal was evident in the strong effects of
appraisal set (Experiment 2) and message quality (Experiments 3 and 4) on message validity judgments and opinion change, as well as in the significant correlations between persuasion and validity judgments. Further, analysis of covariance and path analysis performed on the Experiment 4 data indicate that these correlations reflect a causative influence of validity judgment on persuasion, such that message quality and message duration affect persuasion, at least partly, through their effect on appraisal of the message.

On the one hand, these findings concerning comprehension and appraisal essentially elaborate and clarify relationships that previously have been discussed in rather piecemeal fashion in the social-psychological literature (e.g., Eagly (1974) on comprehension; Greenwald (1968) on cognitive responses). On the other hand, the results of Experiment 4 provide some new information on how the mediating variables are themselves interrelated. Specifically, the path analyses of the previous chapter provide some supportive evidence for the stage conceptualization of the information processing model, in which a sequential order of occurrence from comprehension to appraisal processing to opinion decision is assumed. Due to the presence of several relatively weak links in the supported path models, some shortcomings of the data set that was analyzed, and the fact that path analysis is more a
descriptive than an inferential statistical method, this support must be viewed with some caution. At the very least, however, the stage conceptualization can be taken as a tentative model of the causal ordering of information processing variables.

Findings and Implications Regarding Message Exposure Duration and Amount of Information Processing

Message exposure duration was expected to influence persuasion because it directly affects the ability to comprehend the message and to engage in appraisal processing. The experiments demonstrate conclusively that persuasion is increased by an increase in message exposure duration when (a) the dominant appraisal response to the message is favorable based on the high quality of the messages and (b) the increase in duration allows for greater comprehension of the message. When condition (a) is absent, because message quality is very poor, increases in message duration appear to have no effects on persuasion, even when comprehension improves. The unfavorable validity judgments given to low quality $T_{\text{min}}$ duration messages suggest that this is because very little appraisal is necessary to spot a very poor argument once it is comprehended.

No conclusions are possible regarding the effects of increasing duration beyond the level of full comprehension. Experiment 2 found increased opinion change due to such
an increase when message quality was high. And the Experiment 4 path analysis suggested that duration influenced validity judgment independently of the effect of comprehension. But the remaining experiments (including the overall results of Experiment 4) found no persuasion effect either way in the post-full-comprehension range of duration. In Experiments 1 and 4, there were no such persuasion effects despite evidence (in the form of a negative linear message duration-repetition reading time relationship) that more information processing occurred with every increment in message duration. It is possible, as noted in the previous chapter, that the opinion and validity judgment measures were insensitive to the effects of this increasing processing on cognitions about the persuasion topic. Increased thought, for example, may have strengthened or weakened posttest opinion (depending on the dominant appraisal response produced) without actually affecting its extremity. This is a possibility that must be tested in future experiments. For now, however, the hypothesis that amount of persuasion is related to amount of appraisal processing when comprehension is held constant remains essentially undecided.

Practical implications of the results. Since they deal with a readily manipulable real-world variable, the results have several practical implications. First, they suggest that, if advertisers or other users of the mass
media have reasonably convincing messages, it is worth their while to present these messages for a duration that is at least sufficient for full comprehension of the entire message. Or, if they are working with a nonchangeable duration level, they should design the message to be fully understood at the specified duration. Thus, printed television messages should be pretested to determine the duration required by most viewers for fully comprehensible reading. Roadside billboards should be designed to include messages that are as brief and concise as possible, so as to maximize the likelihood that passing motorists will fully comprehend them. Finally, if self-paced reading is involved (e.g., newspaper articles), and the message contains multiple pieces of persuasive information, the communicator should encourage the reader to read carefully.

For the probably less common case of low message quality, the experiments suggest that the positive persuasive impact of a low quality message cannot be increased readily through any manipulation of message exposure duration. At least with very poor messages, little appraisal seems necessary for the message to be discounted. A possible exception to this may be the case of the "fast talker". As noted previously, Miller, Maruyama, Beaber, & Valone (1976) obtained evidence that speed of speech is positively related to persuasion, presumably because the fast talk is taken as a sign of credibility. It should be
noted, though, that Miller et al's experiments did not involve messages of particularly low quality. Until further research clarifies the issue, the practical advice from this dissertation is that rapid message presentation with the intent of hiding flawed arguments by preventing appraisal is no substitute for actually improving the arguments.

The apparent positive relationship between message duration and amount of appraisal processing also has practical implications. Advertisers might be advised to increase message durations if they believe that it is important for consumers to give detailed thought to the qualities of their products. This advice, however, assumes that the appropriate processing set also has been induced. It was pointed out in Chapter 2 that message recipients may approach communications with any one of several different processing sets, ranging from passing interest (or disinterest!) to detailed scholarly analysis. In most real world persuasion settings, the level of recipient involvement is probably quite low (cf. McGuire, 1969; Miller et al., 1976). Under such circumstances, message recipients may not use the increased processing opportunity created by increasing message duration. The key, then, may be to induce high motivation to appraise the message.

This dissertation, of course, has dealt exclusively with the effects of variation in the duration of printed persuasive communications. The foregoing list of
implications, therefore they not generalize completely to
duration effects in the case of audio/visual messages. As
observed by Chaiken & Eagly (1976), the printed and audio/
visual modalities differ in several ways, with the most
obvious difference perhaps being that the latter convey
nonverbal cues such as tone of voice and appearance of the
speaker. Accordingly, it will be important to extend re-
search on duration effects to these other communication
modalities.

In general, much yet remains to be learned about how
amount of information processing affects persuasion and
other affective processes. Hopefully, the present research
will encourage further investigations of this relationship.
Four experiments (a) examined the persuasion effects of message exposure duration and (b) tested an information processing model of persuasion that considers amount of processing, the conceptual variable influenced by duration. The model states that persuasion involves two successive encoding processes: comprehension of message information and appraisal of that information in relation to memory-based knowledges and opinions (i.e., "cognitive responses"). These processes yield evaluative thoughts about the message topic that are then integrated into an opinion. It is assumed that amount of comprehension and amount of appraisal (which together comprise total processing) vary with ability and motivation, with resultant effects on persuasion. Increases in comprehension should positively affect persuasion, since comprehension makes message-originated thoughts salient. When processing proceeds to appraisal, the effects of additional processing should depend on the dominant appraisal response, the most frequent type of thought, message-favorable or unfavorable, during appraisal. In-
creasing appraisal processing should facilitate persuasion when the dominant appraisal response is favorable, but inhibit persuasion when it is unfavorable.

The experiments employed a within-subjects manipulation of duration of exposure to printed messages (of 120-160 words). Subjects proceeded through a computer-controlled presentation, encountering first opinion pretests, then 16 to 20 messages on current issues, interspersed with opinion posttests and other measures. Three (Experiment 4) or four (Experiments 1-3) levels of message duration were encountered, including sub-comprehensible, just-sufficient for full comprehension (T_{min}), and longer than necessary for full comprehension (by 1.4 to 2.0 times).

Three experiments (1, 2, and 4) found the expected information processing effects of message duration. Message comprehension increased as duration increased to T_{min}, but was unaffected by further increases. In addition, several messages in each experiment were repeated without a fixed duration, and reading time for these repetitions was recorded. Repetition reading time was a negative linear function of initial message duration, suggesting that total processing of initial messages increased with each duration increment.

Experiments 1 and 2 examined the persuasive impact of high quality messages expected to produce a favorable dominant appraisal response. In Experiment 1, persuasion
increased between the sub-comprehensible and $T_{\text{min}}$ duration levels, but was not affected by further duration increases.

In Experiment 2, subjects were encouraged to carefully appraise messages, and both opinion change and the favorability of message validity judgments (an index of appraisal outcome) increased linearly over four duration levels.

In Experiments 3 and 4, message quality (high or low) was a factor. For high quality messages, the pattern of Experiment 1 was replicated in that opinion change increased only as duration increased from sub-comprehensible to $T_{\text{min}}$ (Experiment 4 only). Validity judgments were unaffected by duration. For low quality messages, which were expected to elicit a negative dominant appraisal response, there was no persuasion at any duration level and validity judgments became increasingly unfavorable as duration increased.

From these results, it was concluded that increasing duration will increase persuasion when (a) the dominant appraisal response is favorable and (b) the increase in duration produces greater message comprehension. The effects of increases in duration beyond $T_{\text{min}}$ are unclear, since, despite evidence that total processing increased in each experiment, an observable persuasion effect at this level occurred only in Experiment 2. Possible reasons for this outcome were discussed.
For the theoretical model in general, the results indicate that both comprehension and appraisal are intervening processes in persuasion. The mediation of comprehension was evident in the persuasion effect of increasing message duration from sub-comprehensible to $T_{\text{min}}$. The mediation of appraisal was evident in the persuasion effects of message quality and in significant within-cell correlations between opinion change and validity judgments (average $r = +.35$). In addition, path analysis of duration effects in Experiment 4 provided further evidence of these mediational roles and indicated that the comprehension-appraisal-integration stage conceptualization is tenable.
LIST OF REFERENCES


Baron, R. S., Baron, P. H., & Miller, N. The relationship between distraction and persuasion. Psychological Bulletin, 1973, 80, 310-323.


Insko, C. A., Turnbull, W., & Yandell, B. Facilitative and inhibiting effects of distraction on attitude change. Sociometry, 1974, 37, 508-528.


King, B. T., & Janis, I. L. Comparison of the effectiveness of improvised versus non-improvised role-playing in producing opinion changes. Human Relations, 1956, 9, 177-186.


Wilson, W., & Miller, H. Repetition, order of presentation, and timing of arguments and measures as determinants of opinion change. *Journal of Personality and Social Psychology*, 1968, 9, 184-188.


Three subjects' data were discarded due to their extreme $T_{\text{min}}$ estimates. The estimates for these subjects were 15, 93, and 96 seconds. The first subject admitted that he was a speed reader and indicated that he had been able to comprehend even messages presented for a $0.6(T_{\text{min}})$ duration. The latter two subjects' $T_{\text{min}}$ estimates were considered long enough to cast doubt on whether they were following the $T_{\text{min}}$ instructions and on whether they took the experiment seriously.

The absence of an effect for measurement delay is consistent with the findings of earlier computer-based experiments using the policy issues messages (see Baumgardner et al., 1978; Leippe, 1976). Unlike certain other persuasion materials (cf. Baumgardner et al., 1978), the impact of these messages is quite persistent. Leippe (1976), for example, found no significant decay 24 hours after exposure in an experiment in which subjects participated in a computer session on two successive days.

Consistent with the expectation that subjects would read some comments, only 2 out of 72 subjects (3%) indicated that they had not read any comments when queried after the experiment. In addition, 27 out of the 72 subjects (37.5%) whose data were analyzed were found reading a questionnaire when the experimenter returned four minutes after leaving them alone with the questionnaires.

The two subjects who were familiar with a comment writer both indicated that they had not, in fact, seen or talked to that person during the academic quarter in which the experiment and its pilot work were conducted.

The subject whose data was discarded due to an extreme $T_{\text{min}}$ estimate had an estimate of 75 seconds. After the experiment, the subject indicated that he had read the test messages for both comprehension and appraisal.
Though statistical significance is usually the primary consideration in judging whether a path should be deleted, most writers suggest that practical significance should also be considered (cf. Kerlinger & Pedhazur, 1973). In fact, Billings & Wroten (1978) advocate that, provided they are of a meaningful size, nonsignificant paths may have to be retained under certain conditions in order to provide a best fit of the model to the data. Due to the relatively small sample size and exploratory nature of the present analysis, the less stringent criterion of practical significance was followed when it seemed appropriate.

The direct link from total processing to posttest opinion also might be viewed as evidence that amount of appraisal processing is related to persuasion. However, this inference cannot be fully justified. Comprehension was undoubtedly confounded with the repetition reading time measure of total processing and, due to the design constraint discussed earlier, it is impossible to partial out the effect of comprehension on the processing-to-posttest link.
APPENDIX A

MESSAGES AND MEASURES

211
LIST OF POLICY ISSUE TOPICS

SHOULD PUERTO RICO BE ADMITTED AS A STATE?

SHOULD COLLEGE ATHLETIC PROGRAMS BE APROVED?

SHOULD MORE EFFORT BE PUT INTO FEEDING HOME ANIMALS IN CAPTIVITY?

SHOULD TEXTBOOKS BE FREE IN PUBLIC SCHOOLS?

SHOULD AEROSOL SPRAYS BE ALLOWED ON THE MARKET?

SHOULD LOCAL DOLLARS BE ALLOCATED FOR RECONSTRUCTION OF THE ENVIRONMENT?

SHOULD THE U.S. STOP TRADING WITH COUNTRIES WHO SLAUGHTER ANIMALS THAT THE U.S. HAS DECLARED ENDANGERED SPECIES?

SHOULD MATHEMATICS BE A REQUIRED SUBJECT IN COLLEGE?

SHOULD PEOPLE USE DETERGENTS CONTAINING PHOSPHATES?

SHOULD PUBLIC WATER SUPPLIES BE FLUORINATED?

SHOULD CARS BE EQUIPPED WITH CATALYTIC CONVERTERS?

SHOULD AIRPLANE PILOTS BE REQUIRED TO TAKE A FLYING TEST TO RENEW THEIR LICENSES?

SHOULD CHILDREN BE EXPOSED TO VIOLENCE ON TV?

SHOULD THE CONSTITUTION BE AMENDED TO SPELL OUT WHAT CONSTITUTES AN IMPEACHABLE OFFENSE?

SHOULD MEDICAL MALPRACTICE SUITS BE ALLOWED?

SHOULD THE U.S. POSTAL SERVICE BE ECONOMICALLY SELF-SUFFICIENT?

SHOULD CONSUMERS BOYCOTT CEREALS HAVING CHEMICAL ADDITIVES?

SHOULD CHILD-PROOF SAFETY CAPS BE REQUIRED ON ALL MEDICINE CONTAINERS?

SHOULD PROFESSORS BE REQUIRED TO HAVE POSTED OFFICE HOURS?

SHOULD COAL BE OUR PRIMARY SOURCE OF ENERGY?
SAMPLE MESSAGES
(all experiments)

1^Used as high quality messages in Experiments 3 & 4

COLLEGE ATHLETIC PROGRAMS

THE HUGE AMOUNT OF MONEY USED TO FINANCE COLLEGE ATHLETICS BENEFITS ONLY A FEW STUDENTS. IT WOULD BE MUCH FAIRER IF THE MONEY WERE SPENT ON ACTIVITIES FOR ALL STUDENTS, RATHER THAN ON TRAINING A FEW ATHLETES TO BECOME PROFESSIONALS.

COLLEGE ATHLETICS PUTS TOO MUCH STRESS ON ATHLETIC ACHIEVEMENT AND TOO LITTLE EMPHASIS ON SCHOLASTIC ACHIEVEMENT. THE UNFORTUNATE RESULT OF COLLEGE ATHLETIC PROGRAMS IS THAT MORE HONOR AND PRESTIGE IS GIVEN FOR ATHLETIC ACHIEVEMENT THAN FOR ACADEMIC ACHIEVEMENT.

IN MOST COLLEGE ATHLETIC PROGRAMS, MORE SCHOLARSHIPS ARE AWARDED TO ATHLETES THAN TO STUDENTS WHO EXCEL ACADEMICALLY. IF COLLEGE ATHLETICS WERE DROPPED, SCHOLARSHIPS USUALLY GIVEN TO ATHLETES COULD GO INSTEAD TO GOOD STUDENTS WHO OTHERWISE COULDN'T AFFORD COLLEGE.

COLLEGES ARE PLACES TO PREPARE FOR CAREERS THAT REQUIRE ACADEMIC TRAINING. COLLEGE ATHLETIC PROGRAMS INTERFERE WITH THIS BY ASSOCIATING COLLEGES WITH UNETHICAL RECRUITING, BY LOWERING ACADEMIC STANDARDS, AND BY MAKING COLLEGES TRAINING CAMPS FOR PROFESSIONAL TEAMS.

COLLEGE ATHLETIC PROGRAMS

95% OF ALL COLLEGE ATHLETIC PROGRAMS ARE COMPLETELY SELF-SUPPORTING AND THUS TAKE NO FUNDS AWAY FROM ACADEMIC PROGRAMS. THE REVENUE FROM ATHLETIC PROGRAMS PROVIDES SCHOLARSHIP MONEY THAT SENDS GOOD STUDENTS TO COLLEGE. OTHERWISE THOSE STUDENTS MIGHT BE UNABLE TO ATTEND.

COLLEGE ATHLETICS HELPS INCREASE STUDENTS' PRIDE IN AND INVOLVEMENT WITH THEIR COLLEGE OR UNIVERSITY. THEY MAKE A COLLEGE MORE VISIBLE AND ATTRACTIVE TO THE OUTSIDE COMMUNITY AND THEREFORE IMPROVE COMMUNITY RELATIONS.

ATHLETICS IS AN INTEGRAL PART OF AMERICAN LIFE AND RIGHTLY BELONGS IN A COLLEGE PROGRAM. COLLEGE ATHLETICS HELPS EDUCATE THE IDEALS OF PERSERVANCE, SPORTSMANSHIP, AND TEAMWORK — ALL QUALITIES WHICH ARE IMPORTANT IN ADULT LIFE.

ABANDONING COLLEGE ATHLETICS WOULD BE HARMFUL TO THE STUDENTS AS WELL AS TO UNIVERSITIES. STUDENTS NEED TO BE INVOLVED IN CONSTRUCTIVE EXTRACURRICULAR ACTIVITIES TO ROUND OUT THEIR LIVES. COLLEGE ATHLETICS PROVIDES SUCH AN OUTLET FOR SPECTATORS AND PARTICIPANTS ALIKE.
MEDICAL MALPRACTICE SUITS

MALPRACTICE INSURANCE IS VERY EXPENSIVE FOR DOCTORS. THIS COST GETS TRANSFERRED TO PATIENTS, MAKING MEDICAL CARE TOO EXPENSIVE FOR THOSE WITHOUT HIGH INCOMES OR MEDICAL INSURANCE. MEDICAL CARE WOULD BE REASONABLY PRICED IF MALPRACTICE SUITS WERE NOT ALLOWED.

NO ONE, NOT EVEN THE BEST OF DOCTORS, IS PERFECT. ALLOWING MALPRACTICE SUITS IS UNFAIR TO DOCTORS BECAUSE THEY ARE PENALIZED MUCH MORE HARSHPLY FOR THEIR MISTAKES THAN ARE OTHER PROFESSIONALS WHO HAVE AN EQUAL RESPONSIBILITY FOR THE WELL BEING OF OTHERS.

DOCTORS GO THROUGH YEARS OF TRAINING AND TESTING IN MEDICAL SCHOOL, INTERNSHIP, AND RESIDENCY BEFORE THEY CAN BE LICENSED. BY THE TIME THEY HAVE ACHIEVED THESE QUALIFICATIONS, IT IS INSULTING TO THEM TO BE SUBJECTTED CONTINUALLY TO THE HARRASSMENT OF MALPRACTICE CLAIMS.

THE NUISANCE OF MALPRACTICE SUITS AND INSURANCE HAS ALREADY CAUSED MANY FINE DOCTORS AND POTENTIAL DOCTORS TO ABANDON THE PRACTICE OF MEDICINE. THIS THREAT TO OUR NATION'S MEDICAL CARE SYSTEM SHOULD BE ELIMINATED BY NOT ALLOWING MALPRACTICE SUITS.

PATIENTS ARE CONSUMERS WHO NEED TO HAVE LEGAL RECOURSE AGAINST NEGLECTFUL MEDICAL CARE, JUST AS THEY HAVE LEGAL RECOURSE AGAINST NEGLIGENCE IN OTHER SERVICES THEY PURCHASE. ELIMINATING MALPRACTICE SUITS WOULD DENY PATIENTS THIS BASIC ASPECT OF CONSUMER PROTECTION.

THE POSSIBILITY OF FACING MEDICAL MALPRACTICE SUITS KEEPS DOCTORS OBLIGED TO STAY ACQUAINTED WITH THE MOST CURRENT AND MOST EFFECTIVE MEDICAL TECHNIQUES. THIS IS CERTAINLY IN THE BEST INTEREST OF THEIR PATIENTS AND THEIR PROFESSION.

DESPITE THE GENERALLY HIGH QUALITY OF MEDICAL SCHOOLS AND STATE LICENSING PROCEDURES, A FEW INCOMPETENTS ACHIEVE THE M.D. AND ENTER MEDICAL PRACTICE. MALPRACTICE SUITS PROVIDE A NEEDED WAY TO GET THE INCOMPETENTS OUT OF POSITIONS IN WHICH THEY MAY HARM MANY PATIENTS.

ELIMINATING THE POSSIBILITY OF MEDICAL MALPRACTICE SUITS IS THE EQUIVALENT OF TELLING DOCTORS THEY NEEDN'T FEEL RESPONSIBLE FOR THEIR MISTAKES. IF THEY ARE NOT RESPONSIBLE, WHO IS? AND IF THEY DON'T FEEL RESPONSIBLE, HOW CAN PATIENTS HAVE CONFIDENCE IN THEM?
SAMPLE LOW QUALITY MESSAGES

(Used in Experiments 3 & 4)

COLLEGE ATHLETIC PROGRAMS

Colleges have programs that require a large amount of money. Although many participate in intramurals, the only ones who benefit are the varsity athletes who will later turn pro. The intramurals can be sacrificed.

Many colleges in the U.S. give fewer academic scholarships than they are capable of giving. To increase the number of academic scholarships, college athletic programs should be abandoned. They waste money that could be used better for faculty salaries, etc.

In college, academic achievement should be stressed exclusively. Due to college athletics, however, athletic achievement is an important area of accomplishment for some students. This situation can be corrected by abandoning college athletic programs.

Colleges are places to prepare for careers that require academic training. To better achieve such preparation, college athletics should be abandoned, since intercollegiate athletics are distracting and may result in lowered academic achievement for some students.

MEDICAL MALPRACTICE SUITS

Medical schools seem unable to avoid letting in a few incompetents, who might also manage not to be detected by certification and licensing boards. Therefore, medical malpractice suits should be allowed as a necessary means of weeding the incompetents out.

The possibility of facing medical malpractice suits obliges doctors to protect themselves by doing large numbers of tests on patients and requiring longer stay in the hospital. Since this results in more thorough medical care, malpractice suits should be allowed.

Doctors have a way of taking a casual approach to patients, and not feeling responsible for the patient's well being. Medical malpractice suits should be allowed as a means of assuring that doctors will feel responsible for the health of their patients.

A medical doctor works on the human body just as an auto mechanic works on cars. Just as a car owner should have the opportunity to sue a mechanic for work improperly done, so should a patient be able to sue a doctor for medical malpractice.
SAMPLES OF DEPENDENT MEASURES

A. OPINION QUESTION (EXPERIMENTS 1-4)

SHOULD COLLEGE ATHLETICS BE ABANDONED?

A
SHOULD NOT BE
ABANDONED

B
SHOULD BE
ABANDONED

EXPRESS YOUR OPINION ON THE ABOVE TOPIC USING A NUMBER ON THIS SCALE.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
AGREE WITH POSITION A : UNCERTAIN : AGREE WITH POSITION B
STRONGLY MILDLY : MILDLY STRONGLY

B. VALIDITY JUDGMENT QUESTION (EXPERIMENTS 2-4)

COLLEGE ATHLETIC PROGRAMS

IN YOUR JUDGMENT, HOW VALID, OVERALL, WERE THE ARGUMENTS IN
THE MESSAGE YOU READ ABOUT THE ABOVE TOPIC?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
COMPLETELY : SOMEWHAT : SOMEWHAT : COMPLETELY
INVALID : INVALID : VALID : VALID

C. MESSAGE CONTENT RETENTION QUESTION (EXPERIMENTS 1 & 2)

SHOULD COLLEGE ATHLETICS BE ABANDONED?

EARLIER IN THE SESSION, YOU READ A MESSAGE ABOUT THE
ABOVE ISSUE.

AS YOU RECOLLECT, WHICH TWO OF THE FOLLOWING ASPECTS OF THIS
ISSUE WERE DISCUSSED IN THE MESSAGE?

1. NUMBER OF STUDENTS OVER WHICH MONEY FOR ATHLETICS IS DISTRIBUTED

2. EFFECTS OF ATHLETICS ON COLLEGE-COMMUNITY RELATIONS

3. STUDENTS AND EXTRACURRICULAR ACTIVITIES

4. COLLEGE ATHLETIC PROGRAMS AND ATHLETIC STANDARDS
D. MESSAGE CONCLUSION RETENTION QUESTION (EXPERIMENT 4)

SHOULD COLLEGE ATHLETICS BE ABANDONED?

A

SHOULD BE
ABANDONED

B

SHOULD NOT BE
ABANDONED

EARLIER YOU READ A 3-PARAGRAPH MESSAGE ON THE ABOVE ISSUE. AS YOU RECOLLECT, WHICH CONCLUSION, A OR B, DID THE MESSAGE RECOMMEND?

0 = CONCLUSION A

1 = CONCLUSION B

E. MESSAGE LINE RECOGNITION QUESTION (EXPERIMENT 4)

1 REQUIRE A LARGE AMOUNT OF MONEY. ALTHOUGH MANY PARTICIPATE IN INTRA-

2 LY. DUE TO COLLEGE ATHLETICS, HOWEVER, ATHLETIC ACHIEVEMENT IS AN

3 TRAINING. COLLEGE ATHLETIC PROGRAMS INTERFERE WITH THIS BY ASSOCIAT-

4 TRAINING. TO BETTER ACHIEVE SUCH PREPARATION, COLLEGE ATHLETICS

WHICH TWO OF THE ABOVE LINES WERE PRESENT IN TWO MESSAGE PARAGRAPHS YOU READ EARLIER?
APPENDIX B

INSTRUCTIONS FOR EXPERIMENT 1
PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF FOUR SHORT PARAGRAPHS. AT SOME POINT DURING THE SESSION, YOU WILL BE ASKED TO EXPRESS AN OPINION FOR EACH OF THE MESSAGE TOPICS, AS WELL AS FOR A FEW TOPICS FOR WHICH NO MESSAGES ARE TO BE PRESENTED. YOUR OPINION RESPONSES WILL BE ENTIRELY ANONYMOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

IN THE FIRST PART OF TODAY'S EXPERIMENT, WE WOULD LIKE TO OBTAIN AN IDEA OF HOW FAST YOU CAN READ THE TYPE OF MESSAGES THAT ARE USED IN THIS RESEARCH PROGRAM. SHORTLY, YOU WILL RECEIVE TWO SAMPLE MESSAGES. YOUR TASK WILL BE TO READ THESE MESSAGES AS QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND THE MEANING OF EACH ARGUMENT IN THE MESSAGE. IN OTHER WORDS, WE WOULD LIKE YOU TO READ THE MESSAGES AT YOUR FASTEST (!) READING SPEED -- NOT SO FAST THAT YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN NECESSARY FOR UNDERSTANDING. THIS IS NOT A TEST OF YOUR READING SPEED. RATHER, WE WISH TO OBTAIN AN IDEA OF THE MAXIMUM SPEED WITH WHICH WRITTEN COMMUNICATIONS CAN BE READ.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

PRESS "ENTER" WHEN YOU ARE READY TO RECEIVE THE FIRST OF TWO MESSAGES FOR WHICH YOUR READING TIME WILL BE MEASURED. REMEMBER, READ AT THE FASTEST SPEED AT WHICH YOU CAN FULLY UNDERSTAND THE MESSAGE.

THE READING TIME MEASUREMENT PORTION OF TODAY'S SESSION IS NOW OVER. THE MAJOR PART OF TODAY'S EXPERIMENT, AS WAS NOTED EARLIER, WILL INVOLVE READING A SERIES OF MESSAGES AND EXPRESSING OPINIONS ABOUT THE TOPICS OF THESE MESSAGES. MOST (BUT NOT ALL) OF THE MESSAGES WILL BE PRESENTED ON THE MONITOR FOR A FIXED DURATION. THAT IS, AFTER A CERTAIN AMOUNT OF TIME FOLLOWING ITS APPEARANCE, A MESSAGE AUTOMATICALLY WILL BE ERASED FROM THE SCREEN.

THE DURATION OF PRESENTATION WILL DIFFER FOR EACH MESSAGE. BEFORE READING EACH MESSAGE, YOU WILL BE TOLD ITS DURATION. FOR SOME MESSAGES, THE PRESENTATION DURATION WILL BE QUITE SHORT; IN SOME CASES, PERHAPS EVEN SO SHORT AS TO PREVENT FULL READING OF THE MESSAGE. FOR OTHER MESSAGES, THOUGH, THE PRESENTATION DURATION MAY BE LONGER THAN NECESSARY. STILL OTHER MESSAGES MAY BE PRESENTED FOR WHAT YOU FIND TO BE JUST THE RIGHT AMOUNT OF TIME. SUCH VARIATION OF DURATION OF MESSAGE PRESENTATION IS MEANT TO CORRESPOND TO SIMILAR VARIATION IN SOME OF THE MASS MEDIA (E.G. TELEVISION).

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

AS WAS NOTED, SOME OF THE MESSAGE PRESENTATION DURATIONS WILL BE VERY SHORT -- TOO SHORT, PERHAPS, FOR YOU TO EXAMINE A MESSAGE FULLY. ACCORDINGLY, SOME OF THE MESSAGES WILL BE REPEATED LATER IN THE SESSION. MESSAGE REPETITIONS WILL NOT HAVE A FIXED PRESENTATION DURATION, SO YOU WILL BE ABLE TO READ THEM AS CLOSELY AS YOU WISH. FOR MESSAGES THAT ARE REPEATED, IF YOU HAVE ALREADY GIVEN AN OPINION ON THE MESSAGE TOPIC FOLLOWING THE MESSAGE'S INITIAL (FIXED DURATION) PRESENTATION, YOU WILL BE GIVEN ANOTHER OPPORTUNITY TO EXPRESS YOUR OPINION AFTER THE REPETITION.

IN ADDITION TO THE MESSAGE REPETITIONS, THE FIRST PRESENTATIONS OF A FEW MESSAGES ALSO WILL NOT HAVE A FIXED DURATION. FOR THESE MESSAGES AND FOR REPETITIONS, YOU SHOULD PRESS "ENTER" WHEN YOU ARE FINISHED READING, IN ORDER TO ERASE THE MESSAGE. MESSAGES WITH FIXED DURATIONS, ON THE OTHER HAND, WILL REMAIN ON THE MONITOR UNTIL THE SPECIFIED TIME OF DURATION HAS ELAPSED, AND THEN WILL BE ERASED WITHOUT THE AID OF PRESSING "ENTER".

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)
EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT SPECIFYING ITS PRESENTATION DURATION. THE STATEMENT EITHER WILL INDICATE THE NUMBER OF SECONDS OF PRESENTATION DURATION, OR, IF THE MESSAGE IS NOT TO HAVE A FIXED DURATION, THAT THE MESSAGE WILL BE PRESENTED FOR A "SELF-DETERMINED DURATION". WHEN THE MESSAGE IS TO HAVE A FIXED DURATION, THE SHORT PRECEDING STATEMENT WILL BE PRESENTED FOR 5 SECONDS. AFTER 5 SECONDS, THE STATEMENT WILL BE ERASED AND REPLACED BY THE MESSAGE. WHEN THE MESSAGE IS TO HAVE A SELF-DETERMINED DURATION, THE PRECEDING STATEMENT WILL BE PRESENTED UNTIL YOU PRESS "ENTER", AT WHICH TIME IT WILL BE ERASED AND THE MESSAGE WILL APPEAR.

(PRESS "ENTER" TO CONTINUE.)

WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15, THE NUMBERS BEING DEFINED AS ON THE SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (!). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW (↑) OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD Respond AGAIN.

(IF YOU UNDERSTAND THE INSTRUCTIONS TO THIS POINT, PRESS "ENTER". OTHERWISE, REREAD THIS PAGE BEFORE GOING ON.)

THIS PAGE IS INTENDED TO GIVE YOU PRACTICE IN USING THE KEYBOARD FOR ENTERING AND CHANGING OPINION RESPONSES. MAKE SURE THAT THE USE OF THE KEYBOARD IS COMPLETELY CLEAR BEFORE PROCEEDING. (REMEMBER THAT A RESPONSE IS COMPLETELY REGISTERED ONLY BY PRESSING "ENTER" TWICE IN SUCCESSION AND THAT YOU CAN CHANGE A RESPONSE AFTER PRESSING "ENTER" ONLY ONCE.) HERE IS THE SAMPLE OPINION STATEMENT:

SHOULD WINE AND 3.2% BEER BE AVAILABLE LEGALLY TO 16-YEAR-OLDS?

A SHOULDBE LEGALLY AVAILABLE
B SHOULD NOT BE LEGALLY AVAILABLE
FURTHER WORDS:

TO INTRODUCE THE TOPICS THAT YOU WILL READ MESSAGES ABOUT, WE WILL ASK YOU OPINION QUESTIONS ABOUT THE TOPICS AT THE VERY BEGINNING OF THE SESSION. THUS, BEFORE ANY MESSAGES ARE PRESENTED A NUMBER OF QUESTIONS WILL APPEAR ON THE MONITOR.

LATER IN THE SESSION, YOU WILL ALSO BE ASKED OPINION QUESTIONS ABOUT THE TOPICS. IN SOME CASES, A QUESTION ON A TOPIC WILL FOLLOW IMMEDIATELY AFTER A MESSAGE ON THAT TOPIC. IN OTHER CASES, A QUESTION ABOUT A MESSAGE TOPIC WILL NOT OCCUR UNTIL LATER IN THE SESSION. FINALLY, SOME OPINION QUESTIONS MAY BE ASKED FOR WHICH NO MESSAGES ARE PRESENTED.

WHEN YOU RESPOND TO AN OPINION QUESTION, MAKE SURE YOU HAVE READ THE QUESTION CAREFULLY. THE "SHOULD" AND "SHOULD NOT" ALTERNATIVES DO NOT ALWAYS APPEAR ON THE SAME SIDE OF THE OPINION RESPONSE SCALE, SO YOU WILL WANT TO BE SURE OF THE RESPONSE ALTERNATIVES FOR EACH QUESTION.

(PRESS "ENTER" TO CONTINUE.)

IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS. OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.

IN THIS EXPERIMENT, IT IS IMPORTANT TO REMEMBER THE FOLLOWING:

1. YOU WILL SEE A SERIES OF MESSAGES DEALING WITH A NUMBER OF TOPICS.

2. MOST MESSAGES WILL BE PRESENTED FOR A FIXED DURATION, ABOUT WHICH YOU WILL BE INFORMED ON THE PAGE PRECEDING THE MESSAGE. THE PRESENTATION DURATION WILL VARY FROM MESSAGE TO MESSAGE. OTHER MESSAGES (MOSTLY REPETITIONS OF EARLIER MESSAGES) WILL NOT BE OF FIXED DURATION.

3. AT VARIOUS POINTS IN THE SESSION, YOU WILL BE ASKED OPINION QUESTIONS ABOUT THE MESSAGE TOPICS.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.)

IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST OPINION QUESTION WILL APPEAR SHORTLY.
THE SEQUENCE OF MESSAGES AND OPINION QUESTIONS IS NOW COMPLETED.

WE NOW WOULD LIKE YOU TO PERFORM ONE ADDITIONAL TASK BEFORE THE EXPERIMENT IS CONCLUDED. SPECIFICALLY, WE WOULD LIKE YOU TO ANSWER SOME QUESTIONS DESIGNED TO MEASURE YOUR MEMORY FOR THE CONTENT OF A FEW OF THE MESSAGES YOU HAVE JUST READ. YOUR RESPONSES TO THESE QUESTIONS WILL HELP US DETERMINE HOW MUCH PEOPLE TYPICALLY REMEMBER ABOUT THE MESSAGES THEY READ IN MASS MEDIA-LIKE SETTINGS.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

IN EACH MEMORY QUESTION, YOU WILL BE SHOWN FOUR SHORT DESCRIPTIONS OF INFORMATION THAT MIGHT HAVE BEEN PRESENTED OR DISCUSSED IN A PARAGRAPH OF A FOUR-PARAGRAPH MESSAGE YOU READ EARLIER. THESE PARAGRAPH DESCRIPTIONS WILL BE NUMBERED FROM 1 TO 4. TWO OF THE DESCRIPTIONS WILL DESCRIBE THE CONTENT OF PARAGRAPHS THAT WERE PART OF THE MESSAGE YOU READ. THE OTHER TWO WILL DESCRIBE PARAGRAPHS THAT WERE NOT PART OF THE MESSAGE. YOUR TASK WILL BE TO INDICATE WHICH TWO DESCRIPTIONS CORRESPOND TO PARAGRAPHS THAT WERE IN THE MESSAGE. HENCE, YOU WILL SELECT TWO OF THE FOUR ALTERNATIVES IN A MEMORY QUESTION.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

WHEN A MEMORY QUESTION APPEARS ON THE MONITOR, YOU SHOULD ENTER ON THE KEYBOARD THE NUMBERS BESIDE THE TWO DESCRIPTIONS THAT YOU BELIEVE DESCRIBE TWO PARAGRAPHS OF THE MESSAGE YOU READ EARLIER. THE NUMBERS CAN BE ENTERED IN ANY ORDER. THAT IS, IF YOUR CHOICES ARE DESCRIPTIONS 1 AND 3, YOU CAN ENTER "1" FIRST, THEN "3", OR "3" FIRST, THEN "1". YOU MUST, HOWEVER, ENTER TWO CHOICES. THE COMPUTER WILL WAIT FOR BOTH RESPONSES BEFORE TENTATIVELY REGISTERING A RESPONSE. ONCE YOU HAVE ENTERED BOTH CHOICES, THE INSTRUCTION "PRESS 'ENTER' OR NEW RESPONSE" WILL APPEAR. AT THIS POINT, YOU CAN EITHER GIVE A DIFFERENT PAIR OF ANSWERS OR REGISTER YOUR RESPONSE WITH "ENTER". WHEN YOU DO PRESS "ENTER", THE QUESTION WILL BE ERASED AND THE NEXT PAGE OF MATERIAL WILL APPEAR. YOU MUST ENTER "ENTER" UNTIL YOU ARE SURE OF YOUR RESPONSES.

(NOTE: UNLIKE WITH OPINION RESPONSES, ANSWERING A MEMORY QUESTION WITH ANYTHING BUT TWO NUMBERS BETWEEN 1 AND 4 WILL NOT RESULT IN AN ERROR MESSAGE. INSTEAD, NOTHING WILL HAPPEN. THE COMPUTER WILL WAIT FOR TWO NUMBERS BETWEEN 1 AND 4 BEFORE TENTATIVELY REGISTERING A RESPONSE.)

A PRACTICE MEMORY QUESTION WILL BE PRESENTED SHORTLY. MAKE SURE YOU UNDERSTAND THE INSTRUCTIONS ON THIS PAGE BEFORE PRESSING "ENTER" TO CONTINUE.

A SAMPLE MEMORY QUESTION FOLLOWS THIS PAGE, PERTAINING TO ONE OF THE MESSAGES FOR WHICH YOUR READING SPEED WAS MEASURED AT THE VERY BEGINNING OF TODAY'S SESSION. SEE IF YOU CAN ANSWER THE QUESTION CORRECTLY, BUT ALSO PRACTICE ENTERING DIFFERENT RESPONSES IF YOU'D LIKE.
A short series of memory questions follows this page. Before beginning, note that there may be times when you are unsure as to which response is correct. Even so, you must give a response. In such cases, your response should be the choices that seem most likely.

If you have any questions about the memory task, please ask them of the experimenter now. Otherwise, press "enter" and the first memory question will appear shortly.

This experiment is part of a continuing research project concerned with when and how persuasive messages, such as television advertisements and newspaper editorials, are effective.

If you have any questions about the purpose of the experiment, or if you would like to obtain more information about any aspects of the procedures, please feel free to ask the experimenter about them.

(Press "enter" for the final instructions.)

The experiment is now over

Please find the experimenter who will give you a short questionnaire and will answer any questions you have about the experiment.
THE EXPERIMENT YOU HAVE JUST PARTICIPATED IN IS CONCERNED WITH HOW THE DURATION OF EXPOSURE TO A PERSUASIVE COMMUNICATION AFFECTS PERSUASION. SINCE PERSUASION MUST INVOLVE A PROCESS OF UNDERSTANDING AND THINKING ABOUT THE ARGUMENTS IN A MESSAGE, THE AMOUNT OF TIME AVAILABLE FOR EXAMINING THE MESSAGE SHOULD AFFECT THE AMOUNT OF OPINION CHANGE PRODUCED BY THE MESSAGE. IN TODAY'S SESSION, MESSAGES WERE PRESENTED FOR DURATIONS THAT RANGED FROM SO SHORT THAT YOU WERE PROBABLY UNABLE TO READ THE MESSAGE IN ENTIRETY, TO CONSIDERABLY LONGER THAN YOU NEEDED TO READ THE MESSAGE THROUGH ONCE. THE ACTUAL PURPOSE OF THE READING TIME TEST AT THE BEGINNING OF THE SESSION WAS TO GET AN ESTIMATE OF YOUR READING SPEED SO THAT WE COULD VARY MESSAGE DURATION APPROPRIATELY.

(PRESS "ENTER" TO CONTINUE.)

WE SUSPECT THAT THE LEAST AMOUNT OF OPINION CHANGE WILL OCCUR WHEN PRESENTATION DURATION IS LESS THAN NECESSARY FOR READING IN ENTIRETY, SINCE ALL THE MESSAGE ARGUMENTS CANNOT BE READ AND SO CAN'T ALL HAVE AN IMPACT. IN GENERAL, THERE SHOULD BE MORE OPINION CHANGE WHEN PRESENTATION DURATION IS SUFFICIENT FOR READING ALL THE MESSAGE ARGUMENTS AND STILL MORE PERSUASION WHEN THE DURATION IS MORE THAN SUFFICIENT. THIS LATTER HYPOTHESIS IS BASED ON THE IDEA THAT A MESSAGE RECIPIENT WILL READ THE MESSAGE ARGUMENTS MORE CAREFULLY WHEN HE/SHE HAS AMPLE TIME. IF THE ARGUMENTS ARE GOOD ONES, AS WE THINK MOST OF THOSE IN TODAY'S EXPERIMENT ARE, THIS CAREFUL READING SHOULD RESULT IN A GREATER RECOGNITION OF THE ARGUMENTS' QUALITY AND, HENCE, LEAD TO GREATER PERSUASION. OF COURSE, IF THE MESSAGE ARGUMENTS ARE OF POOR QUALITY, OR IF THE RECIPIENT IS STRONGLY AGAINST THE POSITION THEY ADVOCATE, TIME FOR MORE CAREFUL READING MIGHT HAVE JUST THE OPPOSITE EFFECT -- REDUCED PERSUASION BECAUSE THE MESSAGE RECIPIENT CAN RECOGNIZE THAT THE ARGUMENTS ARE POOR AND/OR HAS TIME TO THINK UP COUNTERARGUMENTS.

(PRESS "ENTER" TO CONTINUE.)

THE MESSAGE REPETITIONS AND THE SURPRISE MEMORY QUESTIONS WERE INCLUDED TO SEE WHETHER MESSAGE PRESENTATION DURATION AFFECTS COMPREHENSION OF THE MESSAGE. IN THE CASE OF REPETITIONS, WE REASONED THAT THE LESS YOU UNDERSTOOD A MESSAGE THE FIRST TIME YOU SAW IT, THE LONGER YOU WOULD RE-EXAMINE IT WHEN IT WAS PRESENTED A SECOND TIME. HENCE, BY MEASURING YOUR READING TIME FOR THE REPETITIONS, WE COMPARED YOUR MESSAGE COMPREHENSION AT VARIOUS LEVELS OF MESSAGE PRESENTATION DURATION. OUR HUNCH IS THAT MESSAGE COMPREHENSION IS REDUCED SIGNIFICANTLY ONLY WHEN MESSAGE PRESENTATION DURATION IS TOO SHORT TO ALLOW FULL READING.

FINALLY, RECALL THAT SOMETIMES YOUR OPINION WAS ASKED IMMEDIATELY AFTER A MESSAGE AND SOMETIMES AFTER A DELAY. THE PURPOSE OF THIS WAS TO SEE WHETHER DURATION OF MESSAGE PRESENTATION AFFECTS THE PERSISTENCE OF OPINION CHANGE.

WE WELCOME ANY QUESTIONS YOU MIGHT HAVE CONCERNING TODAY'S EXPERIMENT. YOUR GENERAL COMMENTS ARE ALSO ENCOURAGED, PARTICULARLY SINCE, AS A PARTICIPANT, YOU KNOW HOW YOU REACTED.

(PRESS "ENTER" TO CONTINUE.)
APPENDIX C

INSTRUCTIONS AND OTHER MATERIALS FOR EXPERIMENT 2
PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF FOUR SHORT PARAGRAPHS. AFTER READING EACH MESSAGE, YOU WILL BE ASKED TO EXPRESS AN OPINION FOR THE MESSAGE TOPIC. AFTER SOME MESSAGES, YOU WILL ALSO BE ASKED TO GIVE A JUDGMENT OF HOW VALID THE MESSAGE INFORMATION IS. THESE TASKS WILL BE DESCRIBED IN MORE DETAIL LATER. YOUR OPINIONS AND JUDGMENTS WILL BE ENTIRELY ANONYMOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

IN THE FIRST PART OF TODAY'S EXPERIMENT, WE WOULD LIKE TO OBTAIN AN IDEA OF HOW FAST YOU CAN READ THE TYPE OF MESSAGES THAT ARE USED IN THIS RESEARCH PROGRAM. SHORTLY, YOU WILL RECEIVE TWO SAMPLE MESSAGES. YOUR TASK WILL BE TO READ THESE MESSAGES AS QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND THE MEANING OF EACH ARGUMENT IN THE MESSAGE. IN OTHER WORDS, WE WOULD LIKE YOU TO READ THE MESSAGES AT YOUR FASTEST (!) READING SPEED -- NOT SO FAST THAT YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN NECESSARY FOR UNDERSTANDING.

THIS IS NOT A TEST OF YOUR READING SPEED. RATHER, WE WISH TO OBTAIN AN IDEA OF THE MAXIMUM SPEED WITH WHICH WRITTEN COMMUNICATIONS CAN BE READ.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

PRESS "ENTER" WHEN YOU ARE READY TO RECEIVE THE FIRST OF TWO MESSAGES FOR WHICH YOUR READING TIME WILL BE MEASURED. REMEMBER, READ AT THE FASTEST SPEED AT WHICH YOU CAN FULLY UNDERSTAND THE MESSAGE.


(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

AS WAS NOTED, SOME OF THE MESSAGE PRESENTATION DURATIONS WILL BE VERY SHORT — TOO SHORT, PERHAPS, FOR YOU TO EXAMINE A MESSAGE FULLY. ACCORDINGLY, SOME OF THE MESSAGES WILL BE REPEATED LATER IN THE SESSION. MESSAGE REPETITIONS WILL NOT HAVE A FIXED PRESENTATION DURATION, SO YOU WILL BE ABLE TO READ THEM AS CLOSELY AS YOU WISH. FOR MESSAGES THAT ARE REPEATED, IF YOU HAVE ALREADY GIVEN AN OPINION ON THE MESSAGE TOPIC FOLLOWING THE MESSAGE'S INITIAL (FIXED DURATION) PRESENTATION, YOU WILL BE GIVEN ANOTHER OPPORTUNITY TO EXPRESS YOUR OPINION AFTER THE REPLICATION.

IN ADDITION TO THE MESSAGE REPETITIONS, THE FIRST PRESENTATIONS OF A FEW MESSAGES ALSO WILL NOT HAVE A FIXED DURATION. FOR THESE MESSAGES AND FOR REPETITIONS, YOU SHOULD PRESS "ENTER" WHEN YOU ARE FINISHED READING, IN ORDER TO ERASE THE MESSAGE. MESSAGES WITH FIXED DURATIONS, ON THE OTHER HAND, WILL REMAIN ON THE MONITOR UNTIL THE SPECIFIED TIME OF DURATION HAS ELAPSED, AND THEN WILL BE ERASED WITHOUT THE AID OF PRESSING "ENTER".

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)
EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT SPECIFYING ITS PRESENTATION DURATION. THE STATEMENT EITHER WILL INDICATE THE NUMBER OF SECONDS OF PRESENTATION DURATION, OR, IF THE MESSAGE IS NOT TO HAVE A FIXED DURATION, THAT THE MESSAGE WILL BE PRESENTED FOR A "SELF-DETERMINED DURATION".

WHEN THE MESSAGE IS TO HAVE A FIXED DURATION, THE SHORT PRECEDING STATEMENT WILL BE PRESENTED FOR 5 SECONDS. AFTER 5 SECONDS, THE STATEMENT WILL BE ERASED AND REPLACED BY THE MESSAGE. WHEN THE MESSAGE IS TO HAVE A SELF-DETERMINED DURATION, THE PRECEDING STATEMENT WILL BE PRESENTED UNTIL YOU PRESS "ENTER", AT WHICH TIME IT WILL BE ERASED AND THE MESSAGE WILL APPEAR.

(PRESS "ENTER" TO CONTINUE.)

AS WAS NOTED EARLIER, YOU WILL BE ASKED TO EXPRESS YOUR OPINION IMMEDIATELY AFTER READING EACH MESSAGE AND, FOR ABOUT HALF THE MESSAGES, YOU WILL BE ASKED TO PROVIDE A JUDGMENT OF THE MESSAGE'S VALIDITY. THE OPINION AND VALIDITY QUESTIONS ARE DESCRIBED IN THE NEXT FEW PAGES OF INSTRUCTIONS.

(PRESS "ENTER" TO CONTINUE.)

WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15, THE NUMBERS BEING DEFINED AS ON THE SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (1). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW (2). OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD RESPOND AGAIN.

(IF YOU UNDERSTAND THE INSTRUCTIONS TO THIS POINT, PRESS "ENTER". OTHERWISE, REREAD THIS PAGE BEFORE GOING ON.)

THIS PAGE IS INTENDED TO GIVE YOU PRACTICE IN USING THE KEYBOARD FOR ENTERING AND CHANGING OPINION RESPONSES. MAKE SURE THAT THE USE OF THE KEYBOARD IS COMPLETELY CLEAR BEFORE PROCEEDING. (REMEMBER, THAT A RESPONSE IS COMPLETELY REGISTERED ONLY BY PRESSING "ENTER" TWICE IN SUCCESSION THAT YOU CAN CHANGE A RESPONSE AFTER PRESSING "ENTER" ONLY ONCE.) HERE IS THE SAMPLE OPINION STATEMENT:

SHOULD WINE AND 3.2% BEER BE AVAILABLE LEGALLY TO 16-YEAR-OLDS?

A
SHOULD BE
LEGALLY AVAILABLE

B
SHOULD NOT BE
LEGALLY AVAILABLE
FOR ABOUT HALF THE MESSAGES, A VALIDITY QUESTION WILL FOLLOW THE OPINION QUESTION FOR THAT MESSAGE ISSUE. IN RESPONDING TO THIS QUESTION, WE WOULD LIKE YOU TO INDICATE HOW VALID OR CREDIBLE YOU FOUND THE ARGUMENTS IN THE MESSAGES. BY VALIDITY IS MEANT THE SOUNDNESS OR STRENGTH OF THE EVIDENCE, LOGIC, AND FACTS UPON WHICH THE MESSAGE ARGUMENTS ARE BASED. THUS, FOR EACH MESSAGE, YOU SHOULD DECIDE HOW STRONG OR WEAK YOU FEEL ITS SUPPORTING ARGUMENTS ARE. (NOTE THAT IN SOME CASES THE MESSAGE WILL BE PRESENTED FOR TOO SHORT A DURATION FOR YOU TO JUDGE ITS VALIDITY TO YOUR SATISFACTION. IN SUCH CASES YOU SHOULD NONETHELESS RESPOND TO THE VALIDITY QUESTION AS BEST YOU CAN.)

YOUR VALIDITY JUDGMENTS SHOULD BE CONSISTENT WITH HOW THE MESSAGES STRIKE YOU. EVEN THOUGH YOU MIGHT HAVE LITTLE BACKGROUND KNOWLEDGE ABOUT A PARTICULAR MESSAGE ISSUE, TRY TO INDICATE YOUR SUBJECTIVE FEELING ABOUT THE MESSAGE'S VALIDITY.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

HERE IS WHAT A VALIDITY QUESTION WILL LOOK LIKE:

WINE AND 3.2% BEER AND 16-YEAR OLDS

IN YOUR JUDGMENT, HOW VALID, OVERALL, WERE THE ARGUMENTS IN THE MESSAGE YOU READ ABOUT THE ABOVE TOPIC?

1  2  3  4  5  6  7  8  9  10  11  12  13  14  15

COMPLETELY :  SOMEWHAT :  SOMEWHAT :  COMPLETELY

INVALID :  INVALID :  VALID :  VALID

IN ANSWERING VALIDITY QUESTIONS, YOU SHOULD USE THE KEYBOARD IN THE SAME WAY YOU USE IT FOR OPINION RESPONSES. NOTICE THE ALTERNATIVE "8" ON THE VALIDITY SCALE WHICH HAS NO LABEL. THIS REPRESENTS A NEUTRAL ANSWER WHICH YOU CAN USE FOR EITHER OF 2 REASONS: (1) IF YOU CANNOT MAKE A JUDGMENT ABOUT THE MESSAGE'S VALIDITY OR (2) IF YOU FOUND SOME MESSAGE ARGUMENTS VALID AND OTHERS INVALID SO AS TO BALANCE EACH OTHER OUT. WE RECOMMEND YOU USE THE "8" ALTERNATIVE AS LITTLE AS POSSIBLE. IN MOST CASES, YOU SHOULD BE ABLE TO MAKE A JUDGMENT THAT IS ON ONE OR THE OTHER SIDE OF "8".

(PRESS "ENTER" TO CONTINUE.)

A FEW MORE COMMENTS:

TO INTRODUCE THE TOPICS THAT YOU WILL READ MESSAGES ABOUT, WE WILL ASK YOU OPINION QUESTIONS ABOUT THE TOPICS AT THE VERY BEGINNING OF THE SESSION. THUS, BEFORE ANY MESSAGES ARE PRESENTED, A NUMBER OF QUESTIONS WILL APPEAR ON THE MONITOR. LATER IN THE SESSION, YOU WILL AGAIN BE ASKED AN OPINION QUESTION ABOUT EACH TOPIC--IMMEDIATELY AFTER READING A MESSAGE ON THAT TOPIC.

WHEN YOU RESPOND TO AN OPINION QUESTION, MAKE SURE YOU HAVE READ THE QUESTION CAREFULLY. THE "SHOULD" AND "SHOULD NOT" ALTERNATIVES DO NOT ALWAYS APPEAR ON THE SAME SIDE OF THE OPINION RESPONSE SCALE, SO YOU WILL WANT TO BE SURE OF THE RESPONSE ALTERNATIVES FOR EACH QUESTION.
IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS. OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.

A WORD ABOUT THE MESSAGES:  (High Message Quality condition)

THE MESSAGES YOU WILL ENCOUNTER IN TODAY'S SESSION RECENTLY WERE WRITTEN SPECIFICALLY FOR USE IN A PLANNED SERIES OF EXPERIMENTS ON MASS COMMUNICATION. SINCE WE WOULD LIKE TO ACHIEVE AN ACCURATE UNDERSTANDING OF AUDIENCE RESPONSES TO MASS COMMUNICATION, THE MESSAGES WERE WRITTEN VERY CAREFULLY, WITH THE PRIMARY INTENTION OF MAKING THEM AS VALID AS POSSIBLE. ALL OF THE MESSAGES DEAL WITH CONTEMPORARY ISSUES ABOUT WHICH MANY POINTS HAVE BEEN MADE BY MANY PEOPLE. IN CONSTRUCTING EACH MESSAGE, WE ATTEMPTED TO CHOOSE ONLY THOSE ARGUMENTS THAT ARE RELATIVELY LOGICAL AND SOUND.

THE PRESENT STUDY IS CONCERNED WITH ADULT READERS' REACTIONS TO THESE MESSAGES, SO PLEASE GIVE EACH MESSAGE THOUGHTFUL CONSIDERATION.

(PRESS "ENTER" TO CONTINUE)

A WORD ABOUT THE MESSAGES:  (Low Message Quality condition)

THE MESSAGES YOU WILL ENCOUNTER IN TODAY'S SESSION RECENTLY WERE WRITTEN SPECIFICALLY FOR USE IN A PLANNED SERIES OF EXPERIMENTS ON MASS COMMUNICATION. AS NOTED EARLIER, MESSAGES RECEIVED THROUGH THE MASS MEDIA DIFFER WIDELY IN THEIR QUALITY. OFTEN, IN FACT, SUCH MESSAGES ARE INVALID OR MISLEADING. THE PRESENT MESSAGES WERE DESIGNED TO BE SIMILAR TO THOSE OF THE MASS MEDIA, IN THAT NUMEROUS ARGUMENTS CONTAINED IN THE MESSAGES ARE INVALID OR OF OTHERWISE POOR QUALITY. THE POOR ARGUMENTS ARE CHARACTERIZED BY SUCH FLAWS AS POOR LOGIC, WEAK ARGUMENTS, FAILURE TO NOTE IMPORTANT OPPOSING POINTS, AND SO ON. IN SHORT, A FAIR PERCENTAGE OF THE MESSAGE ARGUMENTS YOU WILL SEE, FOR ONE REASON OR ANOTHER, WILL BE QUITE POOR.

NOTE, HOWEVER, THAT NOT ALL THE MESSAGE ARGUMENTS WILL BE POOR. SOME WILL MAKE REASONABLE POINTS AND USE GOOD LOGIC. THUS, ALTHOUGH YOU CAN EXPECT TO READ NUMEROUS INVALID ARGUMENTS, DO NOT ASSUME THAT ALL MESSAGES WILL CONTAIN ONLY POOR ARGUMENTS.

THE PRESENT STUDY IS CONCERNED WITH ADULT READERS' REACTIONS TO THESE MESSAGES. PLEASE GIVE EACH MESSAGE THOUGHTFUL CONSIDERATION. COUNTERARGUE WHEN POSSIBLE AND BE ON THE WATCH FOR POSSIBLE FLAWS IN ARGUMENTS. MAKE SURE, HOWEVER, THAT YOUR JUDGMENTS REFLECT CAREFUL THOUGHT, SINCE MESSAGES WILL VARY IN QUALITY.

(PRESS "ENTER" TO CONTINUE.)
IN THIS EXPERIMENT, IT IS IMPORTANT TO REMEMBER THE FOLLOWING:

1. YOU WILL SEE A SERIES OF MESSAGES DEALING WITH A NUMBER OF TOPICS.

2. MOST MESSAGES WILL BE PRESENTED FOR A FIXED DURATION, ABOUT WHICH YOU WILL BE INFORMED ON THE PAGE PRECEDING THE MESSAGE. THE PRESENTATION DURATION WILL VARY FROM MESSAGE TO MESSAGE. OTHER MESSAGES (MOSTLY REPETITIONS OF EARLIER MESSAGES) WILL NOT BE OF FIXED DURATION.

3. AFTER EACH MESSAGE, YOU WILL BE ASKED AN OPINION QUESTION ABOUT THE MESSAGE TOPIC AND, POSSIBLY, A QUESTION ABOUT THE MESSAGE'S VALIDITY.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.)

IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST OPINION QUESTION WILL APPEAR SHORTLY.
THE SEQUENCE OF MESSAGES AND OPINION QUESTIONS IS NOW COMPLETED.

WE NOW WOULD LIKE YOU TO PERFORM ONE ADDITIONAL TASK BEFORE THE EXPERIMENT IS CONCLUDED. SPECIFICALLY, WE WOULD LIKE YOU TO ANSWER SOME QUESTIONS DESIGNED TO MEASURE YOUR MEMORY FOR THE CONTENT OF A FEW OF THE MESSAGES YOU HAVE JUST READ. YOUR RESPONSES TO THESE QUESTIONS WILL HELP US DETERMINE HOW MUCH PEOPLE TYPICALLY REMEMBER ABOUT THE MESSAGES THEY READ IN MASS MEDIA-LIKE SETTINGS.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

IN EACH MEMORY QUESTION, YOU WILL BE SHOWN FOUR SHORT DESCRIPTIONS OF INFORMATION THAT MIGHT HAVE BEEN PRESENTED OR DISCUSSED IN A PARAGRAPH OF A FOUR-PARAGRAPH MESSAGE YOU READ EARLIER. THESE PARAGRAPH DESCRIPTIONS WILL BE NUMBERED FROM 1 TO 4. TWO OF THE DESCRIPTIONS WILL DESCRIBE THE CONTENT OF PARAGRAPHS THAT WERE PART OF THE MESSAGE YOU READ. THE OTHER TWO WILL DESCRIBE PARAGRAPHS THAT WERE NOT PART OF THE MESSAGE. YOUR TASK WILL BE TO INDICATE WHICH TWO DESCRIPTIONS CORRESPOND TO PARAGRAPHS THAT WERE IN THE MESSAGE. HENCE, YOU WILL SELECT TWO OF THE FOUR ALTERNATIVES IN A MEMORY QUESTION.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

WHEN A MEMORY QUESTION APPEARS ON THE MONITOR, YOU SHOULD ENTER ON THE KEYBOARD THE NUMBERS BESIDE THE TWO DESCRIPTIONS THAT YOU BELIEVE DESCRIBE TWO PARAGRAPHS OF THE MESSAGE YOU READ EARLIER. THE NUMBERS CAN BE ENTERED IN ANY ORDER. THAT IS, IF YOUR CHOICES ARE DESCRIPTIONS 1 AND 3, YOU CAN ENTER "1" FIRST, THEN "3", OR "3" FIRST, THEN "1". YOU MUST, HOWEVER, ENTER TWO CHOICES. THE COMPUTER WILL WAIT FOR BOTH RESPONSES BEFORE TENTATIVELY REGISTERING A RESPONSE. ONCE YOU HAVE ENTERED BOTH CHOICES, THE INSTRUCTION "PRESS 'ENTER' OR NEW RESPONSE" WILL APPEAR. AT THIS POINT, YOU CAN EITHER GIVE A DIFFERENT PAIR OF ANSWERS OR REGISTER YOUR RESPONSE WITH "ENTER". WHEN YOU DO PRESS "ENTER", THE QUESTION WILL BE ERASED AND THE NEXT PAGE OF MATERIAL WILL APPEAR. THUS, YOU SHOULD NOT(!) PRESS "ENTER" UNTIL YOU ARE SURE OF YOUR RESPONSES.

(NOTE: UNLIKE WITH OPINION RESPONSES, ANSWERING A MEMORY QUESTION WITH ANYTHING BUT TWO NUMBERS BETWEEN 1 AND 4 WILL NOT RESULT IN AN ERROR MESSAGE. INSTEAD, NOTHING WILL HAPPEN. THE COMPUTER WILL WAIT FOR TWO NUMBERS BETWEEN 1 AND 4 BEFORE TENTATIVELY REGISTERING A RESPONSE.)

A PRACTICE MEMORY QUESTION WILL BE PRESENTED SHORTLY. MAKE SURE YOU UNDERSTAND THE INSTRUCTIONS ON THIS PAGE BEFORE PRESSING "ENTER" TO CONTINUE.

A SAMPLE MEMORY QUESTION FOLLOWS THIS PAGE, PERTAINING TO ONE OF THE MESSAGES FOR WHICH YOUR READING SPEED WAS MEASURED AT THE VERY BEGINNING OF TODAY'S SESSION. SEE IF YOU CAN ANSWER THE QUESTION CORRECTLY, BUT ALSO PRACTICE ENTERING DIFFERENT RESPONSES IF YOU'D LIKE.

(PRESS "ENTER" TO SEE THE SAMPLE MEMORY QUESTION.)
A SHORT SERIES OF MEMORY QUESTIONS FOLLOWS THIS PAGE. BEFORE BEGINNING, NOTE THAT THERE MAY BE TIMES WHEN YOU ARE UNSURE AS TO WHICH RESPONSE IS CORRECT. EVEN SO, YOU MUST GIVE A RESPONSE. IN SUCH CASES, YOUR RESPONSE SHOULD BE THE CHOICES THAT SEEM MOST LIKELY.

IF YOU HAVE ANY QUESTIONS ABOUT THE MEMORY TASK, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST MEMORY QUESTION WILL APPEAR SHORTLY.

THIS EXPERIMENT IS PART OF A CONTINUING RESEARCH PROJECT CONCERNED WITH WHEN AND HOW PERSUASIVE MESSAGES, SUCH AS TELEVISION ADVERTISEMENTS AND NEWSPAPER EDITORIALS, ARE EFFECTIVE.

IF YOU HAVE ANY QUESTIONS ABOUT THE PURPOSE OF THE EXPERIMENT, OR IF YOU WOULD LIKE TO OBTAIN MORE INFORMATION ABOUT ANY ASPECTS OF THE PROCEDURES, PLEASE FEEL FREE TO ASK THE EXPERIMENTER ABOUT THEM.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

THE EXPERIMENT IS NOW OVER

PLEASE FIND THE EXPERIMENTER WHO WILL GIVE YOU A SHORT QUESTIONNAIRE AND WILL ANSWER ANY QUESTIONS YOU HAVE ABOUT THE EXPERIMENT.
DEBRIEFING FORM FOR EXPERIMENT 2

The experiment you have just participated in is concerned with how the duration of exposure to a persuasive communication affects persuasion. Since persuasion must involve a process of understanding and thinking about the arguments in a message, the amount of time available for examining the message may affect the amount of opinion change produced by the message. In today's session, messages were presented for durations that ranged from so short that you were probably unable to read the message in entirety, to considerably longer than you needed to read the message through once. The purpose of the reading time test at the beginning of the session was to get an estimate of your reading speed so that we could vary message duration appropriately for you -- rather than using a single set of durations for all participants.

We suspect that the least amount of opinion change will occur when presentation duration is less than necessary for reading in entirety, since all the message arguments cannot be read and so can't all have an impact. In general, there should be more opinion change when presentation duration is sufficient for reading all the message arguments. When presentation duration is longer than necessary for reading, the story may be more complicated. Our hypothesis is that when the message arguments are good ones, opinion change should be greater with longer presentation durations. However, when the message arguments are poor, or the message recipient is motivated to counterargue or refute them, opinion change should decrease as presentation duration increases beyond the sufficient level. These predictions are based on the idea that a message recipient will read the messages more carefully when permitted ample time. This more careful reading, in turn, should result in greater recognition of the arguments' good or bad qualities. Hence: greater or less opinion change with longer durations, depending on message quality.

The message repetitions and the surprise memory questions were included to see whether message presentation duration affected comprehension of the message. In the case of repetitions, we reasoned that the less you understood a message the first time you saw it, the longer you would re-examine it when it was presented a second time. Hence, by measuring your reading time for the repetitions, we compared your message comprehension at various levels of message presentation duration.

If you have any questions about the purposes of the experiment as described above, or if you would like to obtain more information about any aspects of the procedures, please feel free to ask the experimenter about them. We would appreciate it if you would not discuss this experiment with any other students who might possibly participate in it in the future. As you can see, it is important that participants remain unaware if the purposes of the experiment until after they have completed the session. Thank you for your participation!
In the following space, we would like you to indicate your overall reaction to the messages you have read in today's session. Please give your opinion about the validity, persuasiveness, and overall quality of the arguments contained in the group of messages you read.

I'm not sure which were valid. They lacked clear and validity

In my opinion, they did little to impress the opponents

Overall, I thought the content was too based on the

I didn’t realize how much was written on the

Boiled down, it seems that most of the arguments were illogical and lacked

Insights into these complexities...
In the following space, we would like you to indicate your overall reaction to the messages you have read in today's session. Please give your opinion about the validity, persuasiveness, and overall quality of the arguments contained in the group of messages you read.

The messages we've brought out were specific arguments. Many interesting points were presented and conveyed justifiable arguments.
POSTEXPERIMENTAL QUESTIONNAIRE
(EXPERIMENT 2)

Name:__________________________________________

Hometown:_______________________________________

Quarter:__________________________________________

Experiment Number:______________________________

In the following space, we would like you to indicate your overall reaction to the messages you have read in today's session. Please give your opinion about the validity, persuasiveness, and overall quality of the arguments contained in the group of messages you read.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
On the scale below, please rate the overall quality of the messages that you read in today's session. (Circle the number that represents your judgment.)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>Very Poor</td>
<td>Somewhat Good</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>Poor</td>
<td>Somewhat Good</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the space below, please indicate briefly what you think the purpose of today's experiment is.
APPENDIX D

INSTRUCTIONS FOR EXPERIMENT 3
PILOT EXPERIMENT

PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF FOUR SHORT PARAGRAPHS. AFTER READING EACH MESSAGE, YOU WILL BE ASKED TO (1) EXPRESS AN OPINION FOR THE MESSAGE TOPIC AND (2) GIVE A JUDGMENT OF HOW VALID THE MESSAGE INFORMATION IS. THESE TASKS WILL BE DESCRIBED IN MORE DETAIL LATER. YOUR OPINIONS AND JUDGMENTS WILL BE ENTIRELY ANONYMOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION. SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

IN THE FIRST PART OF TODAY'S EXPERIMENT, WE WOULD LIKE TO OBTAIN AN IDEA OF HOW FAST YOU CAN READ THE TYPE OF MESSAGES THAT ARE USED IN THIS RESEARCH PROGRAM. SHORTLY, YOU WILL RECEIVE TWO SAMPLE MESSAGES. YOUR TASK WILL BE TO READ THESE MESSAGES AS QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND THE MEANING OF EACH ARGUMENT IN THE MESSAGE. IN OTHER WAYS WE WOULD LIKE YOU TO READ THE MESSAGES AT YOUR FASTEST (!) READING SPEED -- NOT SO FAST THAT YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN NECESSARY FOR UNDERSTANDING.

THIS IS NOT A TEST OF YOUR READING SPEED. RATHER, WE WISH TO OBTAIN AN IDEA OF THE MAXIMUM SPEED WITH WHICH WRITTEN COMMUNICATIONS CAN BE READ.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

PRESS "ENTER" WHEN YOU ARE READY TO RECEIVE THE FIRST OF TWO MESSAGES FOR WHICH YOUR READING TIME WILL BE MEASURED. REMEMBER, READ AT THE FASTEST SPEED AT WHICH YOU CAN FULLY UNDERSTAND THE MESSAGE.


(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT SPECIFYING ITS PRESENTATION DURATION IN SECONDS. THIS STATEMENT WILL BE PRESENTED FOR 5 SECONDS, AFTER WHICH IT WILL BE ERASED AND REPLACED BY THE MESSAGE.

AS WAS NOTED EARLIER, AFTER EACH MESSAGE YOU WILL BE ASKED TO EXPRESS AN OPINION AND TO PROVIDE A JUDGMENT OF THE MESSAGE'S VALIDITY. THE OPINION AND VALIDITY QUESTIONS ARE DESCRIBED ON THE NEXT FEW PAGES OF INSTRUCTIONS.

(PRESS "ENTER" TO CONTINUE.)
WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15. THE NUMBERS BEING DEFINED AS ON THE SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (\*). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW (^) OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD RESPOND AGAIN.

(If you understand the instructions to this point, press "ENTER". Otherwise, reread this page before going on.)

THIS PAGE IS INTENDED TO GIVE YOU PRACTICE IN USING THE KEYBOARD FOR ENTERING AND CHANGING OPINION RESPONSES. MAKE SURE THAT THE USE OF THE KEYBOARD IS COMPLETELY CLEAR BEFORE PROCEEDING. (REMEMBER THAT A RESPONSE IS COMPLETELY REGISTERED ONLY BY PRESSING "ENTER" TWICE IN CONSECUTION AND THAT YOU CAN CHANGE A RESPONSE AFTER PRESSING "ENTER" ONLY ONCE.) HERE IS THE SAMPLE OPINION STATEMENT:

SHOULD WINE AND 3.2% BEER BE AVAILABLE LEGALLY TO 16-YEAR-OLDS?

A) SHOULD BE LEGALLY AVAILABLE

B) SHOULD NOT BE LEGALLY AVAILABLE

VALIDITY QUESTIONS WILL BE ASKED EITHER IMMEDIATELY BEFORE OR IMMEDIATELY AFTER THE OPINION QUESTION FOR A MESSAGE ISSUE. IN RESPONDING TO THIS QUESTION, WE WOULD LIKE YOU TO INDICATE HOW VALID OR CREDIBLE YOU FOUND THE ARGUMENTS IN THE MESSAGES. BY VALIDITY IS MEANT THE SOUNDNESS OR STRENGTH OF THE EVIDENCE, LOGIC, AND FACTS UPON WHICH THE MESSAGE ARGUMENTS ARE BASED. THUS, FOR EACH MESSAGE, YOU SHOULD DECIDE HOW STRONG OR WEAK YOU FEEL ITS SUPPORTING ARGUMENTS ARE. (NOTE THAT IN SOME CASES THE MESSAGE WILL BE PRESENTED FOR TOO SHORT A DURATION FOR YOU TO JUDGE ITS VALIDITY TO YOUR SATISFACTION. IN SUCH CASES YOU SHOULD NONETHELESS RESPOND TO THE VALIDITY QUESTION AS BEST YOU CAN.) YOUR VALIDITY JUDGMENTS SHOULD BE CONSISTENT WITH HOW THE MESSAGES STRIKE YOU. EVEN THOUGH YOU MIGHT HAVE LITTLE BACKGROUND KNOWLEDGE ABOUT A PARTICULAR MESSAGE ISSUE, TRY TO INDICATE YOUR SUBJECTIVE FEELING ABOUT THE MESSAGE'S VALIDITY.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)
HERE IS WHAT A VALIDITY QUESTION WILL LOOK LIKE:

WINE AND 3.2% BEER AND 16-YEAR OLDS

IN YOUR JUDGMENT, HOW VALID, OVERALL, WERE THE ARGUMENTS IN
THE MESSAGE YOU READ ABOUT THE ABOVE TOPIC?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
COMPLETELY : SOMEWHAT : SOMEWHAT : COMPLETELY
INVALID : INVALID : VALID : VALID

IN ANSWERING VALIDITY QUESTIONS, YOU SHOULD USE THE KEYBOARD
IN THE SAME WAY YOU USE IT FOR OPINION RESPONSES.
NOTICE THE ALTERNATIVE "8" ON THE VALIDITY SCALE WHICH HAS NO
LABEL. THIS REPRESENTS A NEUTRAL ANSWER WHICH YOU CAN USE FOR EITHER
OF 2 REASONS: (1) IF YOU CANNOT MAKE A JUDGMENT ABOUT THE MESSAGE'S
VALIDITY OR (2) IF YOU FOUND SOME MESSAGE ARGUMENTS VALID AND OTHERS
INVALID SO AS TO BALANCE EACH OTHER OUT. WE RECOMMEND YOU USE THE
"8" ALTERNATIVE AS LITTLE AS POSSIBLE. IN MOST CASES, YOU SHOULD
BE ABLE TO MAKE A JUDGMENT THAT IS ON ONE OR THE OTHER SIDE OF "8".
(PRESS "ENTER" TO CONTINUE.)

A FEW MORE COMMENTS:

TO INTRODUCE THE TOPICS THAT YOU WILL READ MESSAGES ABOUT,
WE WILL ASK YOU OPINION QUESTIONS ABOUT THE TOPICS AT THE VERY
BEGINNING OF THE SESSION. THUS, BEFORE ANY MESSAGES ARE PRESENTED,
A NUMBER OF QUESTIONS WILL APPEAR ON THE MONITOR. LATER IN THE
SESSION, YOU WILL AGAIN BE ASKED AN OPINION QUESTION ABOUT EACH
TOPIC, IMMEDIATELY AFTER READING A MESSAGE ON THAT TOPIC.
WHEN YOU RESPOND TO AN OPINION QUESTION, MAKE SURE YOU HAVE
READ THE QUESTION CAREFULLY. THE "SHOULD" AND "SHOULD NOT" ALTERNATIVES DO NOT ALWAYS APPEAR ON THE SAME SIDE OF THE OPINION RESPONSE SCALE, SO YOU WILL WANT TO BE SURE OF THE RESPONSE ALTERNATIVES FOR EACH QUESTION.
(PRESS "ENTER" TO CONTINUE.)

IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD
KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY
ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO
PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS.
OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.
A WORD ABOUT THE MESSAGES:

THE MESSAGES YOU WILL ENCOUNTER IN TODAY'S SESSION RECENTLY WERE WRITTEN SPECIFICALLY FOR USE IN A PLANNED SERIES OF EXPERIMENTS ON MASS COMMUNICATION. AS NOTED EARLIER, MESSAGES RECEIVED THROUGH THE MASS MEDIA TEND TO DIFFER CONSIDERABLY IN THEIR QUALITY. SOMETIMES SUCH MESSAGES ARE VERY GOOD WHILE OTHER TIMES THEY ARE INVALID OR MISLEADING. IN TODAY'S SESSION, YOU WILL ENCOUNTER MESSAGES OF THIS WIDE VARIATION IN QUALITY. SOME MESSAGES ARE QUITE POOR IN THAT THEY CONTAIN INVALID AND/OR POOR ARGUMENTS THAT ARE CHARACTERIZED BY SUCH FLAWS AS POOR LOGIC, WEAK POINTS, FAILURE TO NOTE IMPORTANT OPPOSING POINTS, AND SO ON. OTHER MESSAGES, BY CONTRAST, ARE QUITE GOOD, IN THAT THEY CONTAIN ARGUMENTS THAT ARE LOGICAL, SOUND, AND TO THE POINT.

THE PRESENT STUDY IS CONCERNED WITH ADULT READERS' REACTIONS TO THESE MESSAGES. PLEASE GIVE EACH MESSAGE THOUGHTFUL CONSIDERATION. KEEP IN MIND THAT MESSAGES VARY IN QUALITY, AND BE ALERT TO THE POSSIBLE GOOD OR BAD POINTS OF THE MESSAGE ARGUMENTS.

(PRESS "ENTER" TO CONTINUE)

IN THIS EXPERIMENT, IT IS IMPORTANT TO REMEMBER THE FOLLOWING:

1. YOU WILL SEE A SERIES OF MESSAGES DEALING WITH A NUMBER OF TOPICS. THE MESSAGES WILL VARY IN QUALITY SUCH THAT SOME WILL BE RELATIVELY GOOD AND OTHERS POOR.

2. MESSAGES WILL BE PRESENTED FOR A FIXED DURATION, ABOUT WHICH YOU WILL BE INFORMED ON THE PAGE PRECEDING THE MESSAGE. THE PRESENTATION DURATION WILL VARY FROM MESSAGE TO MESSAGE.

3. AFTER EACH MESSAGE, YOU WILL BE ASKED AN OPINION QUESTION ABOUT THE MESSAGE TOPIC AND A QUESTION ABOUT THE MESSAGE'S VALIDITY. EITHER THE OPINION QUESTION OR THE VALIDITY QUESTION MAY BE ASKED FIRST.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.)

IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST OPINION QUESTION WILL APPEAR SHORTLY.
THE EXPERIMENT YOU HAVE JUST PARTICIPATED IN IS CONCERNED WITH HOW THE DURATION OF EXPOSURE TO A PERSUASIVE COMMUNICATION AFFECTS PERSUASION. SINCE PERSUASION MUST INVOLVE A PROCESS OF UNDERSTANDING AND THINKING ABOUT THE ARGUMENTS IN A MESSAGE, THE AMOUNT OF TIME AVAILABLE FOR EXAMINING THE MESSAGE MAY AFFECT THE AMOUNT OF OPINION CHANGE PRODUCED BY THE MESSAGE. IN TODAY'S SESSION, MESSAGES WERE PRESENTED FOR DURATIONS THAT RANGED FROM SO SHORT THAT YOU WERE PROBABLY UNABLE TO READ THE MESSAGE IN ENTIRETY, TO CONSIDERABLY LONGER THAT YOU NEEDED TO READ THE MESSAGE THROUGH ONCE. THE PURPOSE OF THE READING TIME TEST AT THE BEGINNING OF THE SESSION WAS TO GET AN ESTIMATE OF YOUR READING SPEED SO THAT WE COULD VARY MESSAGE DURATION APPROPRIATELY FOR YOU -- RATHER THAN USING A SINGLE SET OF DURATIONS FOR ALL PARTICIPANTS.

(PRESS "ENTER" TO CONTINUE.)

WE SUSPECT THAT THE LEAST AMOUNT OF OPINION CHANGE WILL OCCUR WHEN PRESENTATION DURATION IS LESS THAN NECESSARY FOR READING IN ENTIRETY, SINCE ALL THE MESSAGE ARGUMENTS CANNOT BE READ AND SO CAN'T ALL HAVE AN IMPACT. IN GENERAL, THERE SHOULD BE MORE OPINION CHANGE WHEN PRESENTATION DURATION IS SUFFICIENT FOR READING ALL THE MESSAGE ARGUMENTS. WHEN PRESENTATION DURATION IS LONGER THAT NECESSARY FOR READING, THE STORY MAY BE MORE COMPLICATED. OUR HYPOTHESIS IS THAT WHEN THE MESSAGE ARGUMENTS ARE GOOD ONES, OPINION CHANGE SHOULD BE GREATER WITH LONGER PRESENTATION DURATIONS. HOWEVER, WHEN THE MESSAGE ARGUMENTS ARE POOR, OR THE MESSAGE RECIPIENT IS MOTIVATED TO COUNTERARGUE OR REFUTE THEM, OPINION CHANGE SHOULD DECREASE AS PRESENTATION DURATION INCREASES BEYOND THE SUFFICIENT LEVEL. THESE PREDICTIONS ARE BASED ON THE IDEA THAT A MESSAGE RECIPIENT WILL READ THE MESSAGES MORE CAREFULLY WHEN PERMITTED AMPLE TIME. THIS MORE CAREFUL READING, IN TURN, SHOULD RESULT IN GREATER RECOGNITION OF THE ARGUMENTS' GOOD OR BAD QUALITIES. HENCE: GREATER OR LESS OPINION CHANGE WITH LONGER DURATIONS, DEPENDING ON MESSAGE QUALITY.

(PRESS "ENTER" TO CONTINUE.)

THIS EXPERIMENT IS PART OF A CONTINUING RESEARCH PROJECT CONCERNED WITH WHEN AND HOW PERSUASIVE MESSAGES, SUCH AS TELEVISION ADVERTISEMENTS AND NEWSPAPER EDITORIALS, ARE EFFECTIVE.

IF YOU HAVE ANY QUESTIONS ABOUT THE PURPOSE OF THE EXPERIMENT, OR IF YOU WOULD LIKE TO OBTAIN MORE INFORMATION ABOUT ANY ASPECTS OF THE PROCEDURES, PLEASE FEEL FREE TO ASK THE EXPERIMENTER ABOUT THEM.

WE WOULD APPRECIATE IT IF YOU WOULD NOT DISCUSS THIS EXPERIMENT WITH ANY OTHER STUDENTS WHO MIGHT POSSIBLY PARTICIPATE IN IT IN THE FUTURE. AS YOU CAN SEE, IT IS IMPORTANT THAT PARTICIPANTS REMAIN UNAWARE OF THE PURPOSES OF THE EXPERIMENT UNTIL AFTER THEY HAVE COMPLETED THE SESSION.

THANK YOU FOR YOUR PARTICIPATION TODAY.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

THE EXPERIMENT IS NOW OVER

PLEASE FIND THE EXPERIMENTER WHO WILL GIVE YOU A SHORT QUESTIONNAIRE AND WILL ANSWER ANY QUESTIONS YOU HAVE ABOUT THE EXPERIMENT.
EXPERIMENT 3 PROPER

PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU
WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH
RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED
READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU
WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF
THREE SHORT PARAGRAPHS PRESENTED ON SUCCESSIVE PAGES OF DISPLAY.
AFTER READING EACH MESSAGE, YOU WILL BE ASKED TO (1) EXPRESS AN
OPINION FOR THE MESSAGE TOPIC AND (2) GIVE A JUDGMENT OF HOW VALID
THE MESSAGE INFORMATION IS. THESE TASKS WILL BE DESCRIBED IN MORE
DETAIL LATER. YOUR OPINIONS AND JUDGMENTS WILL BE ENTIRELY ANONY­
MOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM
WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE
INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN
RAPID SUCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS
OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES
CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR
CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES
SUPPORT THEIR Positions WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME
USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO
SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF
THOSE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH
THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS,
POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS,
AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

IN THE FIRST PART OF TODAY'S EXPERIMENT, WE WOULD LIKE TO
OBTAIN AN IDEA OF HOW FAST YOU CAN READ THE TYPE OF MESSAGE PARA­
GRAPHs THAT ARE USED IN THIS RESEARCH PROGRAM. SHORTLY, YOU WILL
RECEIVE A TOTAL OF SIX SAMPLE PARAGRAPHS, THREE ON EACH OF TWO
DIFFERENT TOPICS. YOUR TASK WILL BE TO READ THESE PARAGRAPHS AS
QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND
THEIR MEANING. IN OTHER WORDS, WE WOULD LIKE YOU TO READ THE
PARAGRAPHS AT YOUR FASTEST (!) READING SPEED — NOT SO FAST THAT
YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN
NECESSARY FOR UNDERSTANDING.

THIS IS NOT A TEST OF READING SPEED. RATHER, WE WISH TO
OBTAIN AN IDEA OF THE MAXIMUM SPEED WITH WHICH WRITTEN COMMUNI­
CATIONS CAN BE READ.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)
PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF THREE SHORT PARAGRAPHS PRESENTED ON SUCCESSIVE PAGES OF DISPLAY. AFTER READING EACH MESSAGE, YOU WILL BE ASKED TO (1) EXPRESS AN OPINION FOR THE MESSAGE TOPIC AND (2) GIVE A JUDGMENT OF HOW VALID THE MESSAGE INFORMATION IS. THESE TASKS WILL BE DESCRIBED IN MORE DETAIL LATER. YOUR OPINIONS AND JUDGMENTS WILL BE ENTIRELY ANONYMOUS AND WILL NOT BERecorded IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

IN THE FIRST PART OF TODAY'S EXPERIMENT, WE WOULD LIKE TO OBTAIN AN IDEA OF HOW FAST YOU CAN READ THE TYPE OF MESSAGE PARAGRAPHS THAT ARE USED IN THIS RESEARCH PROGRAM. SHORTLY, YOU WILL RECEIVE A TOTAL OF SIX SAMPLE PARAGRAPHS, THREE ON EACH OF TWO DIFFERENT TOPICS. YOUR TASK WILL BE TO READ THESE PARAGRAPHS AS QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND THEIR MEANING. IN OTHER WORDS, WE WOULD LIKE YOU TO READ THE PARAGRAPHS AT YOUR FASTEST (!) READING SPEED — NOT SO FAST THAT YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN NECESSARY FOR UNDERSTANDING.

THIS IS NOT A TEST OF READING SPEED. RATHER, WE WISH TO OBTAIN AN IDEA OF THE MAXIMUM SPEED WITH WHICH WRITTEN COMMUNICATIONS CAN BE READ.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

THE FIRST THREE PARAGRAPHS WILL DEAL WITH THE TOPIC OF "PROFESSORS' OFFICE HOURS". THE REMAINING THREE PARAGRAPHS WILL DEAL WITH THE TOPIC OF "COAL AND ENERGY NEEDS".

REMEMBER, BY FASTEST READING SPEED, WE MEAN THAT YOU SHOULD READ A PARAGRAPH AT THE FASTEST SPEED AT WHICH YOU CAN FULLY UNDERSTAND ITS MEANING. DO NOT TAKE ANY EXTRA TIME, BUT DO NOT GO SO FAST THAT YOU MISS THE MEANING OF WHAT YOU READ. PLEASE MAKE SURE THESE READING INSTRUCTIONS ARE CLEAR BEFORE PROCEEDING.

PRESS "ENTER" WHEN YOU ARE READY TO RECEIVE THE FIRST OF SIX PARAGRAPHS FOR WHICH YOUR READING TIME WILL BE MEASURED.

THE READING TIME MEASUREMENT PORTION OF TODAY'S SESSION IS NOW OVER. THE MAJOR PART OF TODAY'S EXPERIMENT, AS WAS NOTED EARLIER, WILL INVOLVE READING A SERIES OF MESSAGES. EACH COMPRISED OF THREE SHORT PARAGRAPHS PRESENTED ON SUCCESSIVE PAGES, AND EXPRESSING OPINIONS ABOUT THE TOPICS OF THESE MESSAGES. THE MESSAGE PARAGRAPHS WILL BE PRESENTED FOR A FIXED DURATION. THAT IS, AFTER A CERTAIN AMOUNT OF TIME FOLLOWING ITS APPEARANCE, A MESSAGE PARAGRAPH AUTOMATICALLY WILL BE ERASED FROM THE SCREEN.

THE DURATION OF PRESENTATION OF PARAGRAPHS WILL DIFFER FOR EACH MESSAGE. BEFORE READING EACH MESSAGE, YOU WILL BE TOLD OF THE DURATION OF PRESENTATION OF ITS PARAGRAPHS. FOR SOME MESSAGES, THE PRESENTATION DURATION WILL BE QUITE SHORT; IN SOME CASES, PERHAPS EVEN SO SHORT AS TO PREVENT FULL READING OF THE PARAGRAPH. FOR OTHER MESSAGES, THOUGH, THE PARAGRAPH PRESENTATION DURATION MAY BE LONGER THAN NECESSARY. STILL OTHER MESSAGES MAY BE PRESENTED FOR WHAT YOU FIND TO BE JUST THE RIGHT AMOUNT OF TIME. SUCH VARIATION OF DURATION OF PRESENTATION IS MEANT TO CORRESPOND TO SIMILAR VARIATION IN SOME OF THE MASS MEDIA (E.G., TELEVISION).

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT SPECIFYING (A) THE MESSAGE TOPIC AND (B) THE PARAGRAPH PRESENTATION DURATION. THIS STATEMENT WILL BE PRESENTED FOR 7 SECONDS, AFTER WHICH IT WILL BE ERASED AND REPLACED BY THE FIRST MESSAGE PARAGRAPH.

AS WAS NOTED EARLIER, AFTER EACH MESSAGE YOU WILL BE ASKED TO EXPRESS AN OPINION AND TO PROVIDE A JUDGMENT OF THE MESSAGE'S VALIDITY. THE OPINION AND VALIDITY QUESTIONS ARE DESCRIBED ON THE NEXT FEW PAGES OF INSTRUCTIONS.

(PRESS "ENTER" TO CONTINUE.)
WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15, THE NUMBERS BEING DEFINED AS ON THE SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (!). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW (\(^\) OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD RESPOND AGAIN.

(IF YOU UNDERSTAND THE INSTRUCTIONS TO THIS POINT, PRESS "ENTER". OTHERWISE, REREAD THIS PAGE BEFORE GOING ON.)

THIS PAGE IS INTENDED TO GIVE YOU PRACTICE IN USING THE KEYBOARD FOR ENTERING AND CHANGING OPINION RESPONSES. MAKE SURE THAT THE USE OF THE KEYBOARD IS COMPLETELY CLEAR BEFORE PROCEEDING. (REMEMBER THAT A RESPONSE IS COMPLETELY REGISTERED ONLY BY PRESSING "ENTER" TWICE IN SUCCESSION AND THAT YOU CAN CHANGE A RESPONSE AFTER PRESSING "ENTER" ONLY ONCE.) HERE IS THE SAMPLE OPINION STATEMENT:

SHOULD WINE AND 3.2% BEER BE AVAILABLE LEGALLY TO 16-YEAR-OLDS?

A  SHOULD BE  LEGALLY AVAILABLE
B  SHOULD NOT BE  LEGALLY AVAILABLE

VALIDITY QUESTIONS WILL BE ASKED EITHER IMMEDIATELY BEFORE OR IMMEDIATELY AFTER THE OPINION QUESTION FOR A MESSAGE ISSUE. IN RESPONDING TO THIS QUESTION, WE WOULD LIKE YOU TO INDICATE HOW VALID OR CREDIBLE YOU FOUND THE ARGUMENTS IN THE MESSAGES. BY VALIDITY IS MEANT THE SOUNDNESS OR STRENGTH OF THE EVIDENCE, LOGIC, AND FACTS UPON WHICH THE MESSAGE ARGUMENTS ARE BASED. THUS, FOR EACH MESSAGE, YOU SHOULD DECIDE HOW STRONG OR WEAK YOU FEEL ITS SUPPORTING ARGUMENTS ARE. (NOTE THAT IN SOME CASES THE MESSAGE WILL BE PRESENTED FOR TOO SHORT A DURATION FOR YOU TO JUDGE ITS VALIDITY TO YOUR SATISFACTION. IN SUCH CASES YOU SHOULD NONETHELESS RESPOND TO THE VALIDITY QUESTION AS BEST YOU CAN.) YOUR VALIDITY JUDGMENTS SHOULD BE CONSISTENT WITH HOW THE MESSAGES STRIKE YOU. EVEN THOUGH YOU MIGHT HAVE LITTLE BACKGROUND KNOWLEDGE ABOUT A PARTICULAR MESSAGE ISSUE, TRY TO INDICATE YOUR SUBJECTIVE FEELING ABOUT THE MESSAGE'S VALIDITY.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)
HERE IS WHAT A VALIDITY QUESTION WILL LOOK LIKE:

WINE AND 3.2% BEER AND 16-YEAR OLDS

IN YOUR JUDGMENT, HOW VALID, OVERALL, WERE THE ARGUMENTS IN
THE MESSAGE YOU READ ABOUT THE ABOVE TOPIC?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
COMPLETELY : SOMEWHAT : SOMEWHAT : COMPLETELY
INVALID : INVALID : INVALID : VALID

IN ANSWERING VALIDITY QUESTIONS, YOU SHOULD USE THE KEYBOARD
IN THE SAME WAY YOU USE IT FOR OPINION RESPONSES.
NOTICE THE ALTERNATIVE "S" ON THE VALIDITY SCALE WHICH HAS NO
LABEL. THIS REPRESENTS A NEUTRAL ANSWER WHICH YOU CAN USE FOR EITHER
OF 2 REASONS: (1) IF YOU CANNOT MAKE A JUDGMENT ABOUT THE MESSAGE'S
VALIDITY OR (2) IF YOU FOUND SOME MESSAGE ARGUMENTS VALID AND OTHERS
INVALID SO AS TO BALANCE EACH OTHER OUT. WE RECOMMEND YOU USE THE
"S" ALTERNATIVE AS LITTLE AS POSSIBLE. IN MOST CASES, YOU SHOULD
BE ABLE TO MAKE A JUDGMENT THAT IS ON ONE OR THE OTHER SIDE OF "8".

(PRESS "ENTER" TO CONTINUE.)

A FEW MORE COMMENTS:

TO INTRODUCE THE TOPICS THAT YOU WILL READ MESSAGES ABOUT,
WE WILL ASK YOU OPINION QUESTIONS ABOUT THE TOPICS AT THE VERY
BEGINNING OF THE SESSION. THUS, BEFORE ANY MESSAGES ARE PRESENTED,
A NUMBER OF QUESTIONS WILL APPEAR ON THE MONITOR. LATER IN THE
SESSION, YOU WILL AGAIN BE ASKED AN OPINION QUESTION ABOUT EACH
TOPIC, IMMEDIATELY AFTER READING A MESSAGE ON THAT TOPIC.
WHEN YOU RESPOND TO AN OPINION QUESTION, MAKE SURE YOU HAVE
READ THE QUESTION CAREFULLY. THE "SHOULD" AND "SHOULD NOT"
ALTERNATIVES DO NOT ALWAYS APPEAR ON THE SAME SIDE OF THE OPINION RES-
PONSE SCALE, SO YOU WILL WANT TO BE SURE OF THE RESPONSE ALTERNATIVES
FOR EACH QUESTION.

(PRESS "ENTER" TO CONTINUE.)

IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD
KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY
ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO
DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL
ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO
PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS.
OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.
A WORD ABOUT THE MESSAGES:

THE MESSAGES YOU WILL ENCOUNTER IN TODAY'S SESSION RECENTLY WERE WRITTEN SPECIFICALLY FOR USE IN A PLANNED SERIES OF EXPERIMENTS ON MASS COMMUNICATION. AS NOTED EARLIER, MESSAGES RECEIVED THROUGH THE MASS MEDIA TEND TO DIFFER CONSIDERABLY IN THEIR QUALITY. SOMETIMES SUCH MESSAGES ARE VERY GOOD WHILE OTHER TIMES THEY ARE INVALID OR MISLEADING. IN TODAY'S SESSION, YOU WILL ENCOUNTER MESSAGES OF THIS WIDE VARIATION IN QUALITY. SOME MESSAGES ARE QUITE POOR IN THAT THEY CONTAIN INVALID AND/OR POOR ARGUMENTS THAT ARE CHARACTERIZED BY SUCH FLAWS AS POOR LOGIC, WEAK POINTS, FAILURE TO NOTE IMPORTANT OPPOSING POINTS, AND SO ON. OTHER MESSAGES, BY CONTRAST, ARE QUITE GOOD, IN THAT THEY CONTAIN ARGUMENTS THAT ARE LOGICAL, SOUND, AND TO THE POINT.

THE PRESENT STUDY IS CONCERNED WITH ADULT READERS' REACTIONS TO THESE MESSAGES. PLEASE GIVE EACH MESSAGE THOUGHTFUL CONSIDERATION. KEEP IN MIND THAT MESSAGES VARY IN QUALITY, AND BE ALERT TO THE POSSIBLE GOOD OR BAD POINTS OF THE MESSAGE ARGUMENTS.

(PRESS "ENTER" TO CONTINUE)

IN THIS EXPERIMENT, IT IS IMPORTANT TO REMEMBER THE FOLLOWING:

1. YOU WILL SEE A SERIES OF MESSAGES DEALING WITH A NUMBER OF TOPICS. THE MESSAGES WILL VARY IN QUALITY SUCH THAT SOME WILL BE RELATIVELY GOOD AND OTHERS POOR.

2. MESSAGES WILL BE COMPRISED OF THREE SHORT PARAGRAPHS, EACH OF WHICH WILL BE PRESENTED FOR A FIXED DURATION. THE PRESENTATION DURATION WILL VARY FROM MESSAGE TO MESSAGE AND YOU WILL BE INFORMED OF THE PARAGRAPH DURATIONS FOR A MESSAGE ON THE PAGE PRECEDING THE MESSAGE.

3. AFTER EACH MESSAGE, YOU WILL BE ASKED AN OPINION QUESTION ABOUT THE MESSAGE TOPIC AND A QUESTION ABOUT THE MESSAGE’S VALIDITY. EITHER THE OPINION QUESTION OR THE VALIDITY QUESTION MAY BE ASKED FIRST.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.)

IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST OPINION QUESTION WILL APPEAR SHORTLY.
THE EXPERIMENT YOU HAVE JUST PARTICIPATED IN IS CONCERNED WITH HOW THE DURATION OF EXPOSURE TO A PERSUASIVE COMMUNICATION AFFECTS PERSUASION. SINCE PERSUASION MUST INVOLVE A PROCESS OF UNDERSTANDING AND THINKING ABOUT THE ARGUMENTS IN A MESSAGE, THE AMOUNT OF TIME AVAILABLE FOR EXAMINING THE MESSAGE MAY AFFECT THE AMOUNT OF OPINION CHANGE PRODUCED BY THE MESSAGE. IN TODAY'S SESSION, MESSAGES WERE PRESENTED FOR DURATIONS THAT RANGED FROM SO SHORT THAT YOU WERE PROBABLY UNABLE TO READ THE MESSAGE IN ENTIRETY, TO CONSIDERABLY LONGER THAT YOU NEEDED TO READ THE MESSAGE THROUGH ONCE.

THE PURPOSE OF THE READING TIME TEST AT THE BEGINNING OF THE SESSION WAS TO GET AN ESTIMATE OF YOUR READING SPEED SO THAT WE COULD VARY MESSAGE DURATION APPROPRIATELY FOR YOU -- RATHER THAN USING A SINGLE SET OF DURATIONS FOR ALL PARTICIPANTS.

WE SUSPECT THAT THE LEAST AMOUNT OF OPINION CHANGE WILL OCCUR WHEN PRESENTATION DURATION IS LESS THAN NECESSARY FOR READING IN ENTIRETY, SINCE ALL THE MESSAGE ARGUMENTS CANNOT BE READ AND SO CAN'T ALL HAVE AN IMPACT. IN GENERAL, THERE SHOULD BE MORE OPINION CHANGE WHEN PRESENTATION DURATION IS SUFFICIENT FOR READING ALL THE MESSAGE ARGUMENTS. WHEN PRESENTATION DURATION IS LONGER THAT NECESSARY FOR READING, THE STORY MAY BE MORE COMPLICATED. OUR HYPOTHESIS IS THAT WHEN THE MESSAGE ARGUMENTS ARE GOOD ONES, OPINION CHANGE SHOULD BE GREATER, WITH LONGER PRESENTATION DURATIONS. HOWEVER, WHEN THE MESSAGE ARGUMENTS ARE POOR, OR THE MESSAGE RECIPIENT IS MOTIVATED TO COUNTERARGUE OR REFUTE THEM, OPINION CHANGE SHOULD DECREASE AS PRESENTATION DURATION INCREASES BEYOND THE SUFFICIENT LEVEL. THESE PREDICTIONS ARE BASED ON THE IDEA THAT A MESSAGE RECIPIENT WILL READ THE MESSAGE MORE CAREFULLY WHEN PERMITTED AMPLE TIME. THIS MORE CAREFUL READING, IN TURN, SHOULD RESULT IN GREATER RECOGNITION OF THE ARGUMENTS' GOOD OR BAD QUALITIES. HENCE: GREATER OR LESS OPINION CHANGE WITH LONGER DURATIONS, DEPENDING ON MESSAGE QUALITY.

THIS EXPERIMENT IS PART OF A CONTINUING RESEARCH PROJECT CONCERNED WITH WHEN AND HOW PERSUASIVE MESSAGES, SUCH AS TELEVISION ADVERTISEMENTS AND NEWSPAPER EDITORIALS, ARE EFFECTIVE.

IF YOU HAVE ANY QUESTIONS ABOUT THE PURPOSE OF THE EXPERIMENT, OR IF YOU WOULD LIKE TO OBTAIN MORE INFORMATION ABOUT ANY ASPECTS OF THE PROCEDURES, PLEASE FEEL FREE TO ASK THE EXPERIMENTER ABOUT THEM.

WE WOULD APPRECIATE IT IF YOU WOULD NOT DISCUSS THIS EXPERIMENT WITH ANY OTHER STUDENTS WHO MIGHT POSSIBLY PARTICIPATE IN IT IN THE FUTURE. AS YOU CAN SEE, IT IS IMPORTANT THAT PARTICIPANTS REMAIN UNAWARE OF THE PURPOSES OF THE EXPERIMENT UNTIL AFTER THEY HAVE COMPLETED THE SESSION.

THANK YOU FOR YOUR PARTICIPATION TODAY.

THE EXPERIMENT IS NOW OVER

PLEASE FIND THE EXPERIMENTER WHO WILL GIVE YOU A SHORT QUESTIONNAIRE AND WILL ANSWER ANY QUESTIONS YOU HAVE ABOUT THE EXPERIMENT.
PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF THREE SHORT PARAGRAPHS PRESENTED ON SUCCESSIVE PAGES OF DISPLAY. AFTER READING EACH MESSAGE, YOU WILL BE ASKED TO (1) EXPRESS AN OPINION FOR THE MESSAGE TOPIC AND (2) GIVE A JUDGMENT OF HOW VALID THE MESSAGE INFORMATION IS. THESE TASKS WILL BE DESCRIBED IN MORE DETAIL LATER. YOUR OPINIONS AND JUDGMENTS WILL BE ENTIRELY ANONYMOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)
THE MESSAGE PARAGRAPHS THAT YOU WILL ENCOUNTER IN TODAY'S EXPERIMENT WILL BE PRESENTED FOR A FIXED DURATION. THAT IS, AFTER A CERTAIN AMOUNT OF TIME FOLLOWING ITS APPEARANCE, A MESSAGE PARAGRAPH AUTOMATICALLY WILL BE ERASED FROM THE SCREEN.

THE DURATION OF PRESENTATION OF PARAGRAPHS WILL DIFFER FOR EACH MESSAGE. BEFORE READING EACH MESSAGE, YOU WILL BE TOLD OF THE DURATION OF PRESENTATION OF ITS PARAGRAPHS. FOR SOME MESSAGES, THE PRESENTATION DURATION WILL BE QUITE SHORT; IN SOME CASES, PERHAPS EVEN SO SHORT AS TO PREVENT FULL READING OF THE PARAGRAPH. FOR OTHER MESSAGES, THOUGH, THE PARAGRAPH PRESENTATION DURATION MAY BE LONGER THAN NECESSARY. STILL OTHER MESSAGES MAY BE PRESENTED FOR WHAT YOU FIND TO BE JUST THE RIGHT AMOUNT OF TIME. SUCH VARIATION OF DURATION OF PRESENTATION IS MEANT TO CORRESPOND TO SIMILAR VARIATION IN SOME OF THE MASS MEDIA (E.G., TELEVISION).

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

AS WAS NOTED, SOME OF THE MESSAGE PARAGRAPH PRESENTATION DURATIONS WILL BE QUITE SHORT AND YOU MAY NOT HAVE SUFFICIENT TIME TO FULLY EXAMINE EACH MESSAGE PARAGRAPH. ACCORDINGLY, SOME (ABOUT 1/3) OF THE MESSAGES WILL BE REPEATED LATER IN THE SESSION. THESE REPETITIONS WILL NOT HAVE A FIXED PARAGRAPH PRESENTATION DURATION, SO YOU WILL BE ABLE TO READ EACH PARAGRAPH AS CLOSELY AS YOU WISH. AFTER READING A MESSAGE REPETITION, YOU WILL BE GIVEN ANOTHER OPPORTUNITY TO EXPRESS YOUR OPINION AND YOUR JUDGMENT OF THE MESSAGE'S VALIDITY. (NOTE, HOWEVER, THAT SINCE MOST MESSAGES WILL NOT BE REPEATED, YOU SHOULD BE AS THOUGHTFUL AS POSSIBLE IN MAKING OPINION AND VALIDITY JUDGMENTS THE FIRST TIME YOU ENCOUNTER A MESSAGE.)

WHEN YOU FINISH READING A REPEATED PARAGRAPH, YOU SHOULD PRESS "ENTER" IN ORDER TO ERASE THE PARAGRAPH. PARAGRAPHS WITH A FIXED DURATION, ON THE OTHER HAND, WILL REMAIN ON THE MONITOR SCREEN UNTIL THE SPECIFIED TIME OF DURATION HAS ELAPSED, AND THEN WILL BE ERASED WITHOUT THE AID OF PRESSING "ENTER".

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT SPECIFYING (A) THE MESSAGE TOPIC AND (B) THE PARAGRAPH PRESENTATION DURATION (IN SECONDS). FOR MESSAGES WITH FIXED DURATIONS, THIS STATEMENT WILL BE PRINTED FOR 7 SECONDS, AFTER WHICH IT WILL BE ERASED AND REPLACED BY THE FIRST MESSAGE PARAGRAPH. FOR MESSAGE REPETITIONS WITHOUT A FIXED DURATION, THIS PRECEDING STATEMENT WILL BE PRESENTED UNTIL YOU PRESS "ENTER".

AS HAS BEEN NOTED, AFTER EACH MESSAGE YOU WILL BE ASKED TO EXPRESS AN OPINION AND TO PROVIDE A JUDGMENT OF THE MESSAGE'S VALIDITY. THE OPINION AND VALIDITY QUESTIONS ARE DESCRIBED ON THE NEXT FEW PAGES OF INSTRUCTIONS.

(PRESS "ENTER" TO CONTINUE.)
HERE IS WHAT A VALIDITY QUESTION WILL LOOK LIKE:

WINE AND 3.2% BEER AND 16-YEAR OLDS

IN YOUR JUDGMENT, HOW VALID, OVERALL, WERE THE ARGUMENTS IN
THE MESSAGE YOU READ ABOUT THE ABOVE TOPIC?

123456789101112131415
COMPLETELY: SOMEWHAT: SOMEWHAT: COMPLETELY
INVALID: INVALID: VALID: VALID

IN ANSWERING VALIDITY QUESTIONS, YOU SHOULD USE THE KEYBOARD
IN THE SAME WAY YOU USE IT FOR OPINION RESPONSES.
NOTICE THE ALTERNATIVE "8" ON THE VALIDITY SCALE WHICH HAS NO
LABEL. THIS REPRESENTS A NEUTRAL ANSWER WHICH YOU CAN USE FOR EITHER
OF 2 REASONS: (1) IF YOU CANNOT MAKE A JUDGMENT ABOUT THE MESSAGE’S
VALIDITY OR (2) IF YOU FOUND SOME MESSAGE ARGUMENTS VALID AND OTHERS
INVALID SO AS TO BALANCE EACH OTHER OUT. WE RECOMMEND YOU USE THE
"8" ALTERNATIVE AS LITTLE AS POSSIBLE. IN MOST CASES, YOU SHOULD
BE ABLE TO MAKE A JUDGMENT THAT IS ON ONE OR THE OTHER SIDE OF "8".
(PRESS "ENTER" TO CONTINUE.)

TO INTRODUCE THE TOPICS THAT YOU WILL READ MESSAGES ABOUT,
WE WILL ASK YOU OPINION QUESTIONS ABOUT THE TOPICS AT THE VERY
BEGINNING OF THE SESSION. THUS, BEFORE ANY MESSAGES ARE PRESENTED,
A NUMBER OF QUESTIONS WILL APPEAR ON THE MONITOR. LATER IN THE
SESSION, YOU WILL AGAIN BE ASKED AN OPINION QUESTION ABOUT EACH
TOPIC IMMEDIATELY AFTER READING A MESSAGE ON THAT TOPIC.
WHEN YOU RESPOND TO AN OPINION QUESTION, MAKE SURE YOU HAVE
READ THE QUESTION CAREFULLY. THE "SHOULD" AND "SHOULD NOT" ALTERNATIVES DO NOT ALWAYS APPEAR ON THE SAME SIDE OF THE OPINION RESPONSE SCALE, SO YOU WILL WANT TO BE SURE OF THE RESPONSE ALTERNATIVES FOR EACH QUESTION.

(PRESS "ENTER" TO CONTINUE.)

IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD
KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY
ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO
DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL
ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO
PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS.
OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.
A WORD ABOUT THE MESSAGES:

THE MESSAGES YOU WILL ENCOUNTER IN TODAY'S SESSION RECENTLY WERE WRITTEN SPECIFICALLY FOR USE IN A PLANNED SERIES OF EXPERIMENTS ON MASS COMMUNICATION. AS NOTED EARLIER, MESSAGES RECEIVED THROUGH THE MASS MEDIA TEND TO DIFFER CONSIDERABLY IN THEIR QUALITY. SOMETIMES SUCH MESSAGES ARE VERY GOOD WHILE OTHER TIMES THEY ARE INVALID OR MISLEADING. IN TODAY'S SESSION, YOU WILL ENCOUNTER MESSAGES OF THIS WIDE VARIATION IN QUALITY. SOME MESSAGES ARE QUITE POOR IN THAT THEY CONTAIN INVALID AND/OR POOR ARGUMENTS THAT ARE CHARACTERIZED BY SUCH FLAWS AS POOR LOGIC, WEAK POINTS, FAILURE TO NOTE IMPORTANT OPPOSING POINTS, AND SO ON. OTHER MESSAGES, BY CONTRAST, ARE QUITE GOOD, IN THAT THEY CONTAIN ARGUMENTS THAT ARE LOGICAL, SOUND, AND TO THE POINT.

THE PRESENT STUDY IS CONCERNED WITH ADULT READERS' REACTIONS TO THESE MESSAGES. PLEASE GIVE EACH MESSAGE THOUGHTFUL CONSIDERATION. KEEP IN MIND THAT MESSAGES VARY IN QUALITY, AND BE ALERT TO THE POSSIBLE GOOD OR BAD POINTS OF THE MESSAGE ARGUMENTS.

(PRESS "ENTER" TO CONTINUE)

IN THIS EXPERIMENT, IT IS IMPORTANT TO REMEMBER THE FOLLOWING:

1. YOU WILL SEE A SERIES OF MESSAGES DEALING WITH A NUMBER OF TOPICS. THE MESSAGES WILL VARY IN QUALITY SUCH THAT SOME WILL BE RELATIVELY GOOD AND OTHERS POOR.

2. MESSAGES WILL BE COMPRISED OF THREE SHORT PARAGRAPHS, EACH OF WHICH WILL BE PRESENTED FOR A FIXED DURATION. THE PRESENTATION DURATION WILL VARY FROM MESSAGE TO MESSAGE AND YOU WILL BE INFORMED OF THE PARAGRAPH DURATIONS FOR A MESSAGE ON THE PAGE PRECEDING THE MESSAGE. A FEW MESSAGES WILL BE REPEATED, AND THE REPETITIONS WILL NOT HAVE A FIXED DURATION.

3. AFTER EACH MESSAGE, YOU WILL BE ASKED AN OPINION QUESTION ABOUT THE MESSAGE TOPIC AND A QUESTION ABOUT THE MESSAGE'S VALIDITY.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.)

IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST OPINION QUESTION WILL APPEAR SHORTLY.
The sequence of messages and opinion questions is now completed.

We now would like you to perform one additional task before the experiment is concluded. Specifically, we would like you to answer some questions designed to measure your memory for the content of a few of the messages you have just read. Your responses to these questions will help us determine how much people typically remember about the messages they read in mass media-like situations.

(Press "enter" for more instructions.)

Memory quizzes will consist of two parts. In the first part, you will be presented with an issue dealt with in an earlier message and asked to indicate what the conclusion of the message was with respect to that issue. Here is an example:

Should wine and 3.2% beer be available legally to 16 year-olds?

A: Should be legally available
B: Should not be legally available

Earlier you read a 3-paragraph message on the above issue. As you recollect, which conclusion, A or B, did the message recommend?

0 = conclusion A 1 = conclusion B

Had you read an earlier message on this issue that gave the conclusion stated under "A", you would enter "0". If you recalled that the conclusion was as stated under "B", you would enter "1". As with opinion and validity responses, you must press "enter" twice to completely enter a response. (Press "enter" to continue.)

After the question about a message conclusion, you will be asked a second question pertaining to your memory for that message. This question will involve recognition. You will be presented with 4 single lines of text and be asked to indicate which two (!) of these lines you previously read as part of a message paragraph. In all cases, two of the four lines will come from two paragraphs that were part of the earlier message on a topic. These lines will appear exactly (!) as they appeared in their respective paragraphs.

The other 2 lines in the recognition question will come from message paragraphs that deal with the same topic but which you did not read earlier. In short, to make a correct answer, you have to choose the two lines that you actually read in a message presented earlier today.

(Press "enter" for more instructions.)
WHEN A RECOGNITION QUESTION IS PRESENTED, YOU WILL SEE FOUR LINES LABELLED 1, 2, 3, AND 4. YOU SHOULD ENTER ON THE KEYBOARD THE NUMBERS BESIDE THE TWO LINES THAT YOU BELIEVE WERE PART OF A MESSAGE. THE NUMBERS CAN BE ENTERED IN ANY ORDER. THAT IS, IF YOUR CHOICES ARE LINES 1 AND 3, YOU CAN ENTER "1" FIRST, THEN "3", OR "3" FIRST, THEN "1". YOU MUST, HOWEVER, ENTER TWO CHOICES. THE COMPUTER WILL WAIT FOR BOTH RESPONSES BEFORE TENTATIVELY REGISTERING A RESPONSE. ONCE YOU HAVE ENTERED BOTH CHOICES, THE INSTRUCTION "PRESS 'ENTER' OR NEW RESPONSE" WILL APPEAR. AT THIS POINT, YOU CAN EITHER GIVE A DIFFERENT PAIR OF ANSWERS OR REGISTER YOUR RESPONSE WITH "ENTER". WHEN YOU DO PRESS "ENTER", THE QUESTION WILL BE ERASED AND THE NEXT PAGE OF MATERIAL WILL APPEAR. THUS, YOU SHOULD NOT (!) PRESS "ENTER" UNTIL YOU ARE SURE OF YOUR RESPONSES.

(NOTE: UNLIKE WITH OPINION RESPONSES, ANSWERING A MEMORY QUESTION WITH ANYTHING BUT TWO NUMBERS BETWEEN 1 AND 4 WILL NOT RESULT IN AN ERROR MESSAGE. INSTEAD, NOTHING WILL HAPPEN. THE COMPUTER WILL WAIT FOR TWO NUMBERS BETWEEN 1 AND 4 BEFORE TENTATIVELY ENTERING A RESPONSE.)

A PRACTICE MEMORY QUESTION WILL BE PRESENTED SHORTLY. MAKE SURE YOU UNDERSTAND THE INSTRUCTIONS ON THIS PAGE BEFORE PRESSING "ENTER" TO CONTINUE.

A SAMPLE MEMORY QUESTION FOLLOWS THIS PAGE. ALTHOUGH YOU HAVEN'T SEEN A MESSAGE ON THE TOPIC, PRACTICE ENTERING RESPONSES UNTIL YOU FEEL YOU UNDERSTAND THE PROCEDURE. (PRESS "ENTER" TO SEE THE SAMPLE MEMORY QUESTION.)

1 IN SPITE OF MANY REPORTS OF TEENAGE VANDALISM, THESE ARE THE FEW

2 ARE MATURE ENOUGH AT AGE 16 TO DRINK 3.2% BEER WITHOUT ANY

3 SHOULD NOT BE CONSIDERED DANGEROUS. FOR THIS REASON, A NUMBER

4 IN MANY COUNTRIES WINE IS SERVED AT THE FAMILY TABLE MUCH AS MILK

WHICH TWO OF THE ABOVE LINES WERE PRESENT IN TWO MESSAGE PARAGRAPHS YOU READ EARLIER?

A SHORT SERIES OF MEMORY QUIZZES FOLLOWS THIS PAGE. BEFORE BEGINNING, NOTE THAT THERE MAY BE TIMES WHEN YOU ARE UNSURE AS TO WHICH RESPONSE IS CORRECT. EVEN SO, YOU MUST GIVE A RESPONSE. IN BOTH CASES, YOUR RESPONSE SHOULD BE THE CHOICE(S) THAT SEEMS MOST

IF YOU HAVE ANY QUESTIONS ABOUT THE MEMORY TASK, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST MEMORY QUESTION WILL APPEAR SHORTLY.
THE EXPERIMENT YOU HAVE JUST PARTICIPATED IN IS CONCERNED WITH HOW THE DURATION OF EXPOSURE TO A PERSUASIVE COMMUNICATION AFFECTS PERSUASION. SINCE PERSUASION MUST INVOLVE A PROCESS OF UNDERSTANDING AND THINKING ABOUT THE ARGUMENTS IN A MESSAGE, THE AMOUNT OF TIME AVAILABLE FOR EXAMINING THE MESSAGE MAY AFFECT THE AMOUNT OF OPINION CHANGE PRODUCED BY THE MESSAGE. IN TODAY'S SESSION, MESSAGES WERE PRESENTED FOR DURATIONS THAT RANGED FROM SO SHORT THAT YOU WERE PROBABLY UNABLE TO READ THE MESSAGE IN ENTIRETY, TO CONSIDERABLY LONGER THAN YOU NEEDED TO READ THE MESSAGE THROUGH ONCE.

(PRESS "ENTER" TO CONTINUE.)

WE SUSPECT THAT THE LEAST AMOUNT OF OPINION CHANGE WILL OCCUR WHEN PRESENTATION DURATION IS LESS THAN NECESSARY FOR READING IN ENTIRETY, SINCE ALL THE MESSAGE ARGUMENTS CANNOT BE READ AND SO CAN'T ALL HAVE AN IMPACT. IN GENERAL, THERE SHOULD BE MORE OPINION CHANGE WHEN PRESENTATION DURATION IS SUFFICIENT FOR READING ALL THE MESSAGE ARGUMENTS. WHEN PRESENTATION DURATION IS LONGER THAN NECESSARY FOR READING, THE STORY MAY BE MORE COMPLICATED. OUR HYPOTHESIS IS THAT WHEN THE MESSAGE ARGUMENTS ARE GOOD ONES, OPINION CHANGE SHOULD BE GREATER WITH LONGER PRESENTATION DURATIONS. HOWEVER, WHEN THE MESSAGE ARGUMENTS ARE POOR, OR THE MESSAGE RECIPIENT IS MOTIVATED TO COUNTERARGUE OR REFUTE THEM, OPINION CHANGE SHOULD DECREASE AS PRESENTATION DURATION INCREASES BEYOND THE SUFFICIENT LEVEL. THESE PREDICTIONS ARE BASED ON THE IDEA THAT A MESSAGE RECIPIENT WILL READ THE MESSAGES MORE CAREFULLY WHEN PERMITTED AMPLE TIME. THIS MORE CAREFUL READING, IN TURN, SHOULD RESULT IN GREATER RECOGNITION OF THE ARGUMENTS' GOOD OR BAD QUALITIES. HENCE: GREATER OR LESS OPINION CHANGE WITH LONGER DURATIONS, DEPENDING ON MESSAGE QUALITY.

(PRESS "ENTER" TO CONTINUE.)

THIS EXPERIMENT IS PART OF A CONTINUING RESEARCH PROJECT CONCERNED WITH WHEN AND HOW PERSUASIVE MESSAGES, SUCH AS TELEVISION ADVERTISEMENTS AND NEWSPAPER EDITORIALS, ARE EFFECTIVE.

IF YOU HAVE ANY QUESTIONS ABOUT THE PURPOSE OF THE EXPERIMENT, OR IF YOU WOULD LIKE TO OBTAIN MORE INFORMATION ABOUT ANY ASPECTS OF THE PROCEDURES, PLEASE FEEL FREE TO ASK THE EXPERIMENTER ABOUT THEM.

WE WOULD APPRECIATE IT IF YOU WOULD NOT DISCUSS THIS EXPERIMENT WITH ANY OTHER STUDENTS WHO MIGHT POSSIBLY PARTICIPATE IN IT IN THE FUTURE. AS YOU CAN SEE, IT IS IMPORTANT THAT PARTICIPANTS REMAIN UNAWARE OF THE PURPOSES OF THE EXPERIMENT UNTIL AFTER THEY HAVE COMPLETED THE SESSION.

THANK YOU FOR YOUR PARTICIPATION TODAY.

(PRESS "ENTER" FOR THE FINAL INSTRUCTIONS.)

THE EXPERIMENT IS NOW OVER

PLEASE FIND THE EXPERIMENTER WHO WILL GIVE YOU A SHORT QUESTIONNAIRE AND WILL ANSWER ANY QUESTIONS YOU HAVE ABOUT THE EXPERIMENT.
APPENDIX F

PILOT EXPERIMENT FOR DEVELOPMENT OF

THE MESSAGE EXPOSURE DURATION MANIPULATION

This pilot experiment had two purposes related to developing an effective manipulation of message exposure duration. First, since testing of the theoretical model required duration levels that differed in the amount of appraisal processing they allowed, the study sought to determine the average time difference between reading speed under no time constraints (self-paced reading speed) and reading speed under instructions to read "as fast as possible" while still comprehending the message. The second purpose was to determine the relationship between self-determined message reading time and the relative position of the message in a message sequence. Earlier research using the computer-based procedure (e.g., Ronis et al., 1977) has found reliable differences in reading time as the experimental session progresses. This decrease probably involves several factors, including practice effects leading to more efficient reading, and possibly motivational effects characterized by fatigue or loss of interest.

To make the experiment similar to the typical computer-based persuasion study, post-message opinion responses were obtained for every message topic after varying measurement delays (defined in terms of number of display pages in the message-to-measure interval, as discussed in the text). In addition, half of the messages were preceded by a display page on which the overall conclusion of the message was stated in a single sentence. The other half of the messages were not preceded by a conclusion. This latter manipulation was included primarily for reasons unrelated to this dissertation and will not be discussed except very briefly. In the present context, reading time in the no-preceding conclusion condition was of focal interest, since this corresponds to how messages were presented in the main experiments.
Method

Subjects

Forty-one male and female introductory psychology students at Ohio State University participated for course credit. The data of one subject were discarded because examination of the data revealed that he was proceeding through the experiment at a pace at which comprehensible reading of the messages was impossible.

Procedure and Design

The basic procedure was similar to the main experiments of the dissertation except that message duration was subject-determined. Subjects proceeded through a video monitor presentation of instructions (provided in entirety at the end of this appendix), four-argument messages (see Appendix A), and opinion measures. The time taken to read each message was computer-recorded unobtrusively. Specifically, the computer recorded the time that elapsed between when the message appeared on the monitor display and when the subject pressed a keyboard button that erased the message. The major variable was reading pace, manipulated on a between-subjects basis. Half of the subjects were given the standard instructions used in previous computer-based studies, which simply asked subjects to read the messages as they would read similar messages received in the mass media. (self-paced reading group). The other half of the subjects were instructed to read the messages as fast as they could while still achieving full comprehension (fast-as-possible reading group).

The within-subjects portion of the design was a 2 (preceding conclusion or no preceding conclusion) x 3 (measurement delay: 2, 8, or 16 display page "units") x 3 (sequential blocks within the session). The measurement delay variable, of course, was irrelevant to the message reading time measure.

Results and Discussion

(The opinion results were neither interesting nor relevant to this dissertation and so are not presented.)

Figure 26 shows message reading time as a function of sequential position of the message (in terms of blocks and numerical position) and reading pace. Only data in the no-preceding-conclusion condition is shown. (The major effect of a conclusion was to reduce reading time, but only appreciably in the self-paced reading group.) It can be seen that, overall, reading time was considerably longer
Figure 26. Mean message reading time (in seconds) in the pilot experiment as a function of reading pace and ordinal position of the message in a sequence of 18 messages. Only the means for messages that did not have a preceding conclusion are shown. Each mean is based on 20 observations (1 per subject).
in the self-paced reading group than in the fast-as-possible reading group ($F(1,38) = 4.08, p < .050$) and that reading time decreased as the session progressed in both groups ($F(2,37) = 15.51, p < .001$, for the sequential blocks main effect). As can be seen, however, this decrease was much more dramatic in the self-paced reading condition ($F(2,37) = 3.86, p < .030$, for the Reading Pace x Sequential Blocks interaction).

Two specific aspects of the results were used directly in the manipulation of message exposure duration in the main experiments:

(1) The average reading times were computed for the first five no-preceding-conclusion messages in each reading pace condition. The average in the self-paced reading condition was 56.40 seconds, while in the fast-as-possible reading condition it was 40.13 seconds. Thus, during the first half of the experimental session, self-paced reading time for the average subject was about 1.4 times longer than the fast-as-possible reading time for the average subject. Accordingly, in two of the main experiments, fixed message durations corresponding to a minimum comprehensible (or fast-as-possible) level and a typical self-paced level were made to differ by a ratio of 1 to 1.4 at the outset of the experimental sessions.

(2) The function relating message reading time to message position in the fast-as-possible reading condition was determined by a linear regression of reading time on position. (A previous multiple regression found that only the linear component of position was a significant predictor of reading time.) The observed regression equation was:

$$\text{Reading Time} = 42.92 - (.43 \times \text{Position})$$

During the main experiments, fixed message durations were systematically reduced according to this function, with the intercept value (42.92) being replaced with the initial duration length used in the particular session and particular duration condition.

Additional details about these applications are discussed in the Method section of Experiment 1 (Chapter 2).
INSTRUCTIONS FOR THE PILOT EXPERIMENT

PRESS THE "ENTER" BUTTON ON THE KEYBOARD IN FRONT OF YOU WHEN YOU ARE READY TO RECEIVE THE FIRST PAGE OF INSTRUCTIONS.

STUDIES OF RESPONSE TO WRITTEN COMMUNICATIONS: INSTRUCTIONS

THIS EXPERIMENT IS PART OF A RESEARCH PROGRAM CONCERNED WITH RESPONSES TO SHORT MESSAGES OF THE SORT THAT CAN BE COMMUNICATED READILY VIA PRINT, RADIO, OR TELEVISION. DURING THIS SESSION, YOU WILL SEE A SERIES OF MESSAGES ON THIS MONITOR, EACH CONSISTING OF FOUR SHORT PARAGRAPHS. AT SOME POINT DURING THE SESSION, YOU WILL BE ASKED TO EXPRESS AN OPINION FOR EACH OF THE MESSAGE TOPICS, AS WELL AS FOR A FEW TOPICS FOR WHICH NO MESSAGES ARE TO BE PRESENTED. YOUR OPINION RESPONSES WILL BE ENTIRELY ANONYMOUS AND WILL NOT BE RECORDED IN A MANNER THAT WILL IDENTIFY THEM WITH YOUR NAME.

(PRESS THE "ENTER" BUTTON WHEN YOU HAVE UNDERSTOOD THE INSTRUCTIONS TO THIS POINT.)

Self-Paced Reading Group:

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE; SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED.

WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA. WE RECOMMEND THAT YOU MAKE NO ATTEMPT TO STUDY THEM OR REMEMBER THEIR CONTENT. (THERE IS NOT ENOUGH TIME FOR THIS, NOR WOULD WE EXPECT THAT PEOPLE WOULD STUDY OR MEMORIZE COMPARABLE MESSAGES RECEIVED IN NATURAL SETTINGS.)

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

WHEN YOU HAVE FINISHED LOOKING AT A MESSAGE, PRESS "ENTER" TO PROCEED WITH THE NEXT MESSAGE OR QUESTION. WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15. THE NUMBERS ON THIS SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (!). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW (->)
OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD RESPOND AGAIN.

(IF YOU UNDERSTAND THE INSTRUCTIONS TO THIS POINT, PRESS "ENTER". OTHERWISE, REREAD THIS PAGE BEFORE GOING ON.)
Fast-as-possible Reading Group:

IN THE MASS MEDIA, MESSAGES ARE SOMETIMES PRESENTED IN RAPID SUCCESSION AND SOMETIMES SPREAD OUT THROUGH VARIOUS KINDS OF ENTERTAINMENT. FREQUENTLY MESSAGES ARE REPEATED, AND SOMETIMES CONTRADICTORY MESSAGES ARE PRESENTED. MESSAGES VARY IN THEIR CONTROVERSIALITY, COMPREHENSIBILITY, AND CREDIBILITY. SOME MESSAGES SUPPORT THEIR POSITIONS WITH LOGIC, OR SCIENTIFIC EVIDENCE. SOME USE EMOTIONAL APPEALS. THIS SERIES OF EXPERIMENTS IS AN ATTEMPT TO SIMULATE MASS MEDIA COMMUNICATION, SO MESSAGES HAVING ANY OR ALL OF THESE QUALITIES WILL BE PRESENTED. WE WOULD LIKE YOU TO DEAL WITH THESE MESSAGES AS YOU WOULD DEAL WITH EDITORIALS, ADVERTISEMENTS, POLITICAL CAMPAIGN SPEECHES, NEWS ANALYSES, EDUCATIONAL PROGRAMS, AND OTHER MESSAGES RECEIVED THROUGH THE MASS MEDIA.

(PRESS "ENTER" WHEN YOU ARE READY FOR MORE INSTRUCTIONS.)

BESIDES THE DIFFERENCES AMONG MESSAGES RECEIVED THROUGH THE MASS MEDIA, THERE ARE ALSO CONSIDERABLE DIFFERENCES IN THE WAY PEOPLE READ OR LISTEN TO MESSAGES. THESE DIFFERENCES EXIST BETWEEN PEOPLE AND IN THE SAME PERSON AT DIFFERENT TIMES. FOR EXAMPLE, ON SOME OCCASIONS, A PRINTED MESSAGE WILL BE READ VERY SLOWLY AND CAREFULLY. AT OTHER TIMES, HOWEVER, A PERSON MAY READ A MESSAGE VERY QUICKLY, TAKING ONLY ENOUGH TIME TO GRASP THE MAJOR POINTS MADE BY THE MESSAGE. IN THIS EXPERIMENT, WE ARE INTERESTED IN MASS MEDIA SETTINGS IN WHICH PEOPLE READ MESSAGES VERY QUICKLY. WE WOULD LIKE YOU TO READ EACH MESSAGE AS QUICKLY AS YOU POSSIBLY CAN WHILE STILL BEING ABLE TO UNDERSTAND FULLY THE MEANING OF EACH ARGUMENT IN THE MESSAGE. IN OTHER WORDS, WE'D LIKE YOU TO READ THE MESSAGES AT YOUR FASTEST (!) READING SPEED -- NOT SO FAST THAT YOU CAN'T UNDERSTAND WHAT YOU READ, BUT NOT ANY SLOWER THAN NEEDED FOR UNDERSTANDING. THIS IS NOT A TEST OF YOUR READING SPEED, BUT AN ATTEMPT TO MAKE THIS EXPERIMENT SIMILAR TO MASS MEDIA SETTINGS IN WHICH MESSAGES ARE READ VERY QUICKLY.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

YOU SHOULD READ EACH MESSAGE ONCE AT YOUR FASTEST READING SPEED, REGARDLESS OF HOW INTERESTING OR CONTROVERSIAL YOU FIND THE MESSAGE. IMMEDIATELY AFTER YOU HAVE READ THROUGH THE MESSAGE ONCE, PRESS "ENTER" TO PROCEED WITH THE NEXT MESSAGE OR QUESTION. PLEASE DON'T REREAD ANY MESSAGES.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

WHEN AN OPINION QUESTION IS PRESENTED, YOU SHOULD RESPOND WITH A NUMBER FROM 1 TO 15, THE NUMBERS BEING DEFINED AS ON THE SCALE YOU WILL SEE ON THE NEXT PAGE OF INSTRUCTIONS. NUMERICAL RESPONSES CAN BE ENTERED BY PRESSING ONE OR TWO DIGITS ON THE KEYBOARD, THEN PRESSING "ENTER" TWICE (!). THE FIRST TIME YOU PRESS "ENTER", THE COMPUTER WILL TENTATIVELY REGISTER YOUR RESPONSE WHILE DISPLAYING IT BACK TO YOU IN THE FORM OF AN ARROW ("■") OVER THE NUMBER YOU HAVE SELECTED. AT THIS TIME YOU MAY EITHER MAKE YOUR TENTATIVE RESPONSE FINAL (BY PRESSING "ENTER" AGAIN) OR YOU MAY CHANGE YOUR RESPONSE BY PRESSING A NEW NUMBER (AND THEN PRESSING "ENTER" TWICE). IF YOU ARE SURE OF YOUR RESPONSE, IT IS PERFECTLY ALL RIGHT TO PRESS "ENTER" TWICE WITHOUT WAITING FOR THE FLASHING ARROW. THE COMPUTER WILL AUTOMATICALLY DETECT A ZERO, OR A NUMBER GREATER THAN 15, OR A NONNUMERICAL RESPONSE AS AN ERROR AND WILL GIVE YOU A MESSAGE INDICATING THAT YOU SHOULD RESPOND AGAIN.

(IF YOU UNDERSTAND THE INSTRUCTIONS TO THIS POINT, PRESS "ENTER". OTHERWISE, REREAD THIS PAGE BEFORE GOING ON.)
Both Groups:

EACH MESSAGE WILL BE PRECEDED BY A SHORT STATEMENT INDICATING THE ISSUE WITH WHICH THE MESSAGE WILL DEAL AND, IN SOME (BUT NOT ALL!) CASES, THE OVERALL CONCLUSION FAVORED BY THE MESSAGE ARGUMENTS. AFTER READING A SHORT STATEMENT OF THIS KIND, PRESS "ENTER" AND THE MESSAGE WILL FOLLOW.

(PRESS "ENTER" FOR MORE INSTRUCTIONS.)

THIS PAGE IS INTENDED TO GIVE YOU PRACTICE IN USING THE KEYBOARD FOR ENTERING AND CHANGING OPINION RESPONSES. MAKE SURE THAT THE USE OF THE KEYBOARD IS COMPLETELY CLEAR BEFORE PROCEEDING. (REMEMBER THAT A RESPONSE IS COMPLETELY REGISTERED ONLY BY PRESSING "ENTER" TWICE IN SUCCESSION AND THAT YOU CAN CHANGE A RESPONSE AFTER PRESSING "ENTER" ONLY ONCE.) HERE IS THE SAMPLE OPINION STATEMENT:

SHOULD WINE AND 3.2% BEER BE AVAILABLE LEGALLY TO 16-YEAR-OLDS?

A SHOULDN'T BE LEGALLY AVAILABLE
B SHOULD BE LEGALLY AVAILABLE

IN CASE YOU HAVE NOT PREVIOUSLY BEEN SO INFORMED, YOU SHOULD KNOW THAT HUMAN PARTICIPANTS IN ANY RESEARCH AT OHIO STATE UNIVERSITY ARE AT LIBERTY TO TERMINATE THEIR PARTICIPATION AT ANY TIME THEY SO DESIRE. THE PRECEDING INSTRUCTIONS HAVE DESCRIBED THE TASKS YOU WILL ENCOUNTER IN THIS EXPERIMENT. IF FOR ANY REASON YOU PREFER NOT TO PROCEED WITH THE EXPERIMENT, PLEASE INFORM THE EXPERIMENTER OF THIS. OTHERWISE, PRESS THE "ENTER" BUTTON TO CONTINUE.

Self-Paced Reading Group:

IF AT ANY TIME DURING THE EXPERIMENT, IT APPEARS TO YOU THAT THE EQUIPMENT IS MALFUNCTIONING SO AS TO PREVENT PROPER CONDUCT OF THE EXPERIMENT, PLEASE DISCONTINUE AND FIND THE EXPERIMENTER TO INFORM HIM (HER) OF THIS. (THIS IS NOT LIKELY.) IF YOU HAVE ANY QUESTIONS ABOUT THE INSTRUCTIONS, PLEASE ASK THEM OF THE EXPERIMENTER NOW. OTHERWISE, PRESS "ENTER" AND THE FIRST MESSAGE WILL APPEAR SHORTLY.
Fast-as-possible Reading Group:

If at any time during the experiment, it appears to you that the equipment is malfunctioning so as to prevent proper conduct of the experiment, please discontinue and find the experimenter to inform him (her) of this. (This is not likely.)

Remember, you are to read each message at your fastest reading rate — the fastest rate at which you can understand each point made in the message. If you have any questions about this or any other aspect of the instructions, please ask them of the experimenter now. Otherwise, press "enter" and the first message will appear shortly.

Both Groups:

This experiment is part of a continuing research project concerned with when and how persuasive messages, such as television advertisements and newspaper editorials, are effective.

If you have any questions about the purposes of the experiment, or if you would like to obtain more information about any aspects of the procedures, please feel free to ask the experimenter about them.

(Press "enter" for the final instructions.)

The experiment is now over.

Please find the experimenter who will give you a short questionnaire and will answer any questions you have about the experiment.
APPENDIX G

LIST OF MULTIVARIATE TESTS OF REPLICATION

FACTORS EFFECTS (ALL EXPERIMENTS)

<table>
<thead>
<tr>
<th>Experiment No. (Replication Factor)</th>
<th>df</th>
<th>F</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiment 1</strong> (Treatment-Sequence)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>15,54</td>
<td>0.52</td>
<td>.917</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>7,62</td>
<td>7.49</td>
<td>.001*</td>
</tr>
<tr>
<td>Content Retention</td>
<td>3,66</td>
<td>2.07</td>
<td>.113</td>
</tr>
<tr>
<td><strong>Experiment 1</strong> (Direction-of-Persuasion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>15,54</td>
<td>0.66</td>
<td>.811</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>7,62</td>
<td>0.67</td>
<td>.700</td>
</tr>
<tr>
<td>Content Retention</td>
<td>3,66</td>
<td>0.75</td>
<td>.528</td>
</tr>
<tr>
<td><strong>Experiment 1</strong> (Sequence x Direction-of-Persuasion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>15,54</td>
<td>0.99</td>
<td>.475</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>7,62</td>
<td>1.00</td>
<td>.440</td>
</tr>
<tr>
<td>Content Retention</td>
<td>3,66</td>
<td>0.24</td>
<td>.867</td>
</tr>
<tr>
<td><strong>Experiment 2</strong> (Direction-Sequence)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>15,54</td>
<td>1.31</td>
<td>.232</td>
</tr>
<tr>
<td>Validity Judgment</td>
<td>7,62</td>
<td>0.58</td>
<td>.768</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>3,66</td>
<td>5.70</td>
<td>.002*</td>
</tr>
<tr>
<td>Content Retention</td>
<td>3,66</td>
<td>0.88</td>
<td>.459</td>
</tr>
<tr>
<td><strong>Experiment 2</strong> (Direction-Sequence x Appraisal Set)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>15,54</td>
<td>1.57</td>
<td>.113</td>
</tr>
<tr>
<td>Validity Judgment</td>
<td>7,62</td>
<td>0.80</td>
<td>.593</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>3,66</td>
<td>0.38</td>
<td>.770</td>
</tr>
<tr>
<td>Content Retention</td>
<td>3,66</td>
<td>2.55</td>
<td>.063</td>
</tr>
<tr>
<td><strong>Experiment 3</strong> (Treatment-Sequence)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>45,137</td>
<td>0.71</td>
<td>.905</td>
</tr>
<tr>
<td>Validity Judgment</td>
<td>45,137</td>
<td>0.69</td>
<td>.922</td>
</tr>
<tr>
<td><strong>Experiment 4</strong> (Treatment-Sequence)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion Change</td>
<td>34,82</td>
<td>0.91</td>
<td>.615</td>
</tr>
<tr>
<td>Validity Judgment</td>
<td>34,82</td>
<td>2.18</td>
<td>.002*</td>
</tr>
<tr>
<td>Repetition Reading Time</td>
<td>10,106</td>
<td>1.30</td>
<td>.242</td>
</tr>
<tr>
<td>Line Recognition</td>
<td>10,106</td>
<td>1.42</td>
<td>.181</td>
</tr>
<tr>
<td>Conclusion Retention</td>
<td>10,106</td>
<td>0.53</td>
<td>.864</td>
</tr>
</tbody>
</table>