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ABSTRACT

COUNTER-ATTITUDINAL ENCODING EFFECTS ON MESSAGE STYLE AND PERFORMANCE

by William James McEwen

Experimentation into the research area entitled "counter-attitudinal encoding," through its focus on attitudinal shift, has largely neglected to undertake a thorough analysis of the communication behavior of encoders. This study therefore addressed itself to an examination of the nature of the counter-attitudinal encoding process, i.e. the message performance and style characteristics which are affected by whether or not a writer agrees with the message output required of him.

Research into the effects of psychological stress on communication performance suggests that a general decrement in performance quality will occur as a result of heightened stress. Assuming that counter-attitudinal encoding requirements generate some amount of stress, this performance decrement should be reflected in a slower rate of message output as well as an increasing number of message errors and changes in counter-attitudinal messages.

Research into stress or motivation effects on communication behavior also suggests that a generally lower level of message readability will result from an increase in the stress level under which an encoder is operating.

In addition, available research indicates that an encoder's hesitancy or lack of certainty is reflected in the language he subsequently uses. Varying levels of language intensity have been found to be related to the amount of

polarity or extremity expressed in two principal message elements: verbs and modifiers. It would also appear that certain types of conjunctions reflect the degree of hesitancy present in a message source. Therefore, assuming that encoders of belief-discrepant messages experience greater hesitancy about what they are required to write as well as an increase in cognitive stress, specific message consequences would be expected. Counter-attitudinally produced messages should contain language elements indicative of lower expressed intensity than attitudinally-consistent messages.

All experimental subjects wrote one message which argued in accord with a previously stated opinion and one message which argued in opposition to this opinion. The order in which these messages were written was controlled for, as was the evaluation of the message topic (i.e. whether subjects wrote on a positively or negatively evaluated topic). Message style and performance comparisons were made between each subject's counter-attitudinal and attitude-consistent messages.

It was found that encoders made somewhat more errors when arguing counter-attitudinally than they made when writing attitude-consistent messages, although no difference in message output rate was found.

Encoders also tended to use less intense language when writing counter-attitudinal messages than they used in their attitude-consistent messages. This language intensity decrement was most evident in the apparent mood (more conditional) and voice (more passive) of the verbs used by counter-attitudinal encoders. No difference was observed in the readability levels of counter-attitudinal vs. attitude-consistent messages.

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Possible reasons for the incomplete confirmation of the experimental hypotheses are suggested. Research extensions of the present study and implications for future research into the probable impact of counter-attitudinally produced messages on receiver evaluations and exposure probabilities are discussed.

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At this point in one's graduate career, it seems highly appropriate to turn around and look back. Having discovered where you are now, it is fitting to consider how you got there.

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CHAPTER I

INTRODUCTION

The Problem

The area of "counter-attitudinal encoding" has stimulated a large number of studies in recent years (Janis and Gilmore, 1965; Carlsmith, Collins and Helmreich, 1966; Rosenberg, 1966; Linder, Cooper and Jones, 1967). Typically, experimentation has been directed toward the assessment of attitudinal effects on an individual who takes a belief-discrepant position. Subjects have generally been assigned the task of encoding some "persuasive" message which argues against an attitude which the subject either has previously expressed or is assumed to hold.

The nature of the encoding task may vary widely. The required message output may be written or oral, may allow anonymity or demand personal identification, or may involve encoding a short outline or a comparatively long essay. The experimental situation itself may require the actual production of a message or merely some public or private commitment to encode. In any event, the actual communication output of such experimentation has customarily been of secondary interest. The primary focus of counter-attitudinal encoding research has been on the change in an individual's attitudinal position after encoding.

One result has consistently been found: individuals will alter their initial attitudes to conform more closely to the communication output required

of them. Advocacy of a belief-discrepant position somehow results in attitudinal shift in the direction of that position. Much of the available research has set the goal of determining the variables which affect the magnitude of this resultant shift.

Experimentation has recently centered on the amount of attitude change (so-called "self-persuasion") as a function of the degree of justification offered (differences in monetary compensation or sponsorship favorability). The result of this inquiry has been the current controversy between predictions of shift based on dissonance theory (Festinger, 1957; Carlsmith et al., 1966) and those based on various incentive theories (Janis and Gilmore, 1965; Rosenberg, 1966).

The emphasis on attitudinal shift has led to an almost complete disregard for the nature of the messages actually produced. Some attention has been paid to a few rather gross ratings and measures of communication output. Carlsmith, Collins and Helmreich (1966) used four ratings of essay performance: emphasis used when making points, elaboration and originality, overall quality and persuasiveness, and apparent effort involved. Linder, Cooper and Jones (1967) looked at differences in one objective measure (number of words per essay) in addition to a number of rating scales (degree of organization, persuasiveness, extremity of position advocated). In neither case did the authors find differences in measures or ratings of message content as a function of justification or incentive.

Berger (1968) has provided a summarization of the message analyses which have been performed on communication output by a number of recent researchers. From this summary, it may be seen that there are a number of problems with those studies which have attempted to assess the possible message consequences of counter-attitudinal encoding.

Few objective measures have been used. Of the seven studies cited by Berger which used some message analysis scheme, six used an objective measure. For four of these six, the only reported measure was essay length (number of words per essay). The other measures noted were time spent encoding and number of arguments used. No other objective measures of communication content, performance or style were apparently used.

In addition, the ratings of message output used by such researchers as Rosenberg (1966) and Lindar, Cooper and Jones (1967) have generally been confined to some sort of overall, composite evaluation of message "persuasiveness" or "quality" made by two or three judges.

The researchers thus appear to have overlooked a crucial problem. Their studies have not investigated the differences in encoding performance and communication output resulting from an individual being required to assume a belief-discrepant position -- that is, the message variables which might be affected by differences between an individual's own attitudinal position and his assigned encoding task.

The questions toward which the present study is directed are as follows: How does the process of encoding a counter-attitudinal communication differ from the process of encoding an attitudinally-consistent message? How do people alter their communication performances and styles when writing a belief-discrepant message? The nature of the material encoded should be affected by whether or not the encoder agrees with the required message output. It seems logical that requiring a person to write counter-attitudinally should result in some departure from his "normal" form of writing. What does an individual do differently when he is writing something he does not agree with -- that is, how does counter-attitudinal encoding compare with attitudinally-consistent encoding? Some probable message and performance differences may be suggested from an examination of related research literature.

Psychological Stress: Theory and Research

To the extent that the requirements of a counter-attitudinal encoding situation generate some amount of psychological imbalance and stress, results analogous to those of studies of motivation or stress effects on encoding performance would be expected. It would appear that the inconsistency resulting from compliance with an attitudinally discrepant task induces some form of stress. Research has indicated that this heightened psychological stress should then be reflected in an individual's performance.

Stress has customarily been conceived of as some deviation from the normal "homeostatic" psychological condition, whether such deviation is brought about by the introduction of psychological or cognitive inconsistency or by various situational factors (extraneous noise, time limitations, etc.). Festinger (1957) has stated that any departure from this normal, balanced state is somehow psychologically uncomfortable and will result in an effort to relieve the disturbance. Osgood (1957) has maintained that heightened motivation has both generalized energizing effects and specific cue effects. Therefore, theoretically, psychological stress should lead to certain behaviors designed to lessen this stress.

Lazarus, Deese and Osler (1952) have summarized a number of studies relating psychological stress to verbal and perceptual-motor behavior. In most instances, the result of increased stress has been a decrement in performance (in terms of slower reaction times and impairments in the quality of performance). Thus, the general finding has been that stress has debilitating effects on performance.

It would therefore be expected that encoding behavior should similarly show evidence of some performance decrement under psychologically stressful

conditions. Lynch (1963) has indicated that communication output constitutes a mechanism for tension reduction and stress relief. As such, certain characteristics of a message should be affected by the degree of tension under which the message is produced. If the message production task does serve to reduce tension, this reduction of tension should then be exhibited in the behavior of the individual encoder. Psychological stress should somehow be reflected in an author's communication output.

A number of researchers have proposed communication output measures which might be applied to the determination of specific encoding style and performance variables related to psychological stress. Gynther (1957) reported an index termed "communicative efficiency," a measure of the relevancy of output to the topic assigned. Dollard and Mowrer (1947) proposed a "discomfort-relief quotient" which was purported to index the general drive or tension state of the encoder (with a greater proportion of "discomfort" statements indicative of higher tension). Boder (1940) advocated the use of an "adjective-verb quotient" as a measure of the general activity level in a message. These and other objective measures of the drive level present in a communicator were applied in a message analysis conducted by Osgood and Walker (1959).

In an attempt to determine the effects of extreme levels of motivation on encoding performance and style, Osgood and Walker examined the message characteristics of suicide notes. The authors, utilizing some of the measures mentioned above, compared suicide notes with ordinary personal letters. Four general categories of message variables were examined: stereotypy of language, language disorganization, message indicants of the particular drive (self-destruction) operating, and evidence of conflict. Predictions were made in accord with the notions that psychological stress should, in general, have

debilitating effects on encoding performance and should, more specifically, give rise to manners of expression which would reflect the psychological imbalance state of the encoder.

Osgood and Walker found significant differences in encoding style in three of the four general areas. Suicide notes indicated a higher level of language stereotypy (lower type-token ratios, more repetitions, higher "cloze" scores), thus indicating greater redundancy and predictability of message output. Suicide notes also provided evidence of their authors' heightened drive and conflict states (higher discomfort-relief quotients, greater qualification of verb phrases, more ambivalence constructions and ambivalent assertions).

Although Osgood and Walker could find no evidence of structural disorganization (grammatical and spelling errors), other reserach has provided evidence for expecting some resultant disorganization of message output as a function of stress.

Stress Effects on Message Production

Lazarus, Deese and Osler (1952) have reported studies which indicated a deterioration in verbal production as a result of stress. Increased stress was found to give rise to slower reaction times, longer performance times, and increased errors in production, learning and recall. In addition, Greenberg and Tannenbaum (1962) have investigated the effect of cognitive stress on encoding performance. The authors found that messages produced under situations of cognitive stress (induced by requiring a form of counter-attitudinal encoding from subjects) took longer to encode, and contained more spelling, punctuation and grammatical errors.

Bettinghaus and Preston (1964) also examined the effects of psychological stress on communicators. The authors had subjects encode single sentences in a specified direction (either favorable or unfavorable) with respect to a number of topics. Each subject was required to produce some statements with which he agreed and some with which he disagreed. The authors reported an overall tendency for individuals operating under the pressures of cognitive inconsistency to take more time to encode than those same individuals under cognitively consistent conditions.

Thus, in summary, messages produced by people under conditions of heightened motivation or tension (due to the introduction of variables tending to increase psychological imbalance) should exhibit certain measurable tendencies which are indicative of an overall performance decrement. The encoding performance itself should take longer (or proceed at a slower rate) and the message output should contain more errors.

Language Intensity: Related Research

Messages encoded under conditions of psychological stress should also exhibit characteristics which may be said to indicate decreased language intensity. It has been found that prior attitudes influence recall of information related to those attitudes (Klapper, 1960) as well as the subsequent transmission of this information (Allport and Postman, 1945). It would therefore be expected that prior attitudes should influence any behavior relevant to these attitudes. The process of encoding a message in opposition to an individual's prior attitudinal position should differ from that of encoding a message which is consistent with one's prior beliefs. These differences should be manifested in a greater hesitancy and a lesser intensity in the assertions made by the encoder.

It is posited that an encoder who disagrees with what he is saying would be less likely to use emphatic, extreme language than would an encoder who was in full agreement with the views he was instructed to write on.

Thus, in addition to the performance characteristics expected to result from the heightened tension accompanying a psychologically stressful encoding situation, the style of the message (in terms of expressed language intensity) should also be reflective of an inconsistency between prior attitude and required output.

A number of indices of what may be termed language intensity can be suggested. The level of language intensity in an assertion is partially indicated by the extremity or polarity of the modifiers in that assertion. Howe (1962; 1966), Lilly (1968a; 1968b) and Cliff (1959) have scaled a number of adverbial modifiers in terms of the degree to which they modify the perceived extremity of various adjectives, as judged by a group of receivers. Their results indicated that varying degrees of polarity are expressed by modifiers of the following types:

<u>Modifier Type</u>	<u>Low Intensity</u>	<u>High Intensity</u>
Probabilistic	doubtfully conceivably perhaps	certainly undeniably definitely
Intensive	slightly somewhat	extremely very
Frequency	rarely occasionally sometimes	repeatedly frequently usually
Temporal Proximity	eventually subsequently	instantly immediately

Osgood (1959) has proposed a measure of assertion intensity labelled "evaluative assertion analysis." As a method of indexing the degree to which the author of a given message deviates from evaluative neutrality in discussing a concept, the method relies, in part, on the extremity of the modifiers (adverbs and adjectives) selected by the author. Osgood has reported that judges can reliably distinguish between modifiers indicative of polarized or extreme attitudes (+ 3 modifiers such as "absolutely" or "extremely") and those which suggest a less extreme position (+ 1 modifiers such as "partially" or "somewhat"). Therefore, one index of the degree of favorability or unfavorability expressed in a message would be the polarity of the modifiers chosen by the source in assertions related to the message topic.

Another message characteristic presumably reflective of the attitudinal position of the source would be the verbs used in the assertions made by that source. Osgood stated that "connectors which imply only possible or hypothetical relations between actor and complement" are expressive of low (+ 1) intensity (e.g. "may," "might"). Moderate (+ 2) intensity is connoted by most modal auxiliary verb forms (e.g. "used to," "would," "plan to"). Verb forms indicative of high (+ 3) intensity were said to be those in the unqualified, simple present tense (e.g. "is," "must," "demands").

Another indicator of the source's degree of favorability or unfavorability toward a topic should therefore be the polarity of the verbs contained in the source's communication output. This polarity appears indicable by the general mood of the verbs employed. High intensity language would be marked by less use of conditional, subjunctive verb forms (e.g. "may," "might," "could," "seems") and a correspondingly greater use of the more polarized simple indicative

or imperative mood (e.g. "must," "have to," "is," "demands," "has").

The tense of the verb has also been shown to influence the level of perceived favorability in an evaluative assertion. Osgood has reported that the present tense is indicative of higher intensity than the past or future tenses. Holsti (1967) stated that the use of the past tense is expressive of a lower level of evaluative intensity than is the use of the present tense. Howe (1966) demonstrated that past and future tenses both connote decreased intensity of connection from that manifested by the simple present tense.

The voice of the verbs in a given message has also been found to influence judgments of the activity level of the language used. Johnson (1967), drawing upon some earlier work by Clark (1965), investigated the differences in ratings of terms in active and passive sentences. He found that the use of verbs in the passive voice altered subsequent ratings of the object of the sentence from that obtained when active voice verbs were used. Specifically, the concept being considered by the source was judged as being less dynamic (softer, weaker, less aggressive, less energetic, less potent) under conditions of passive voice verb constructions.

In summary, it may be said that variations in the apparent mood, voice and tense of the verb are all indicators of some deviation from evaluative neutrality in a source's treatment of a message concept.

Osgood and Walker (1959) have reported a greater percentage of "ambivalence constructions" used by encoders under psychological stress. Several of these sample ambivalence constructions ("maybe," "possibly," "seems," "appears") correspond to what has been discussed above as indicants of low language intensity. Others of these constructions ("but," "however") may be viewed in terms of the discussion of message indexing cues put forth by Tannenbaum (1955). Tannenbaum

found that the insertion of the conjunction "but" in a message increased the probability that the message would be viewed as a two-sided presentation. It would seem that the apparent two-sidedness of a communication would serve as an additional indicant of the degree of opinion polarization in a source. Greenberg and Tannenbaum (1962) reported an increase in the likelihood of encoding two-sided messages when performing under conditions of counter-attitudinally induced stress. Thus, some index of the amount of polarity, reflected in the use of ambivalence constructions, would appear to result from psychologically stressful antecedents to message production.

McEwen and Greenberg (1969a; 1969b) reported that messages containing low intensity modifiers and verb forms were judged to be lower in intensity. These messages were rated as expressive of greater hesitancy, uncertainty and weakness of tone than the same message content containing high intensity modifiers and simple, present tense verb forms. Thus, it appears that the modifiers, verb forms and ambivalence constructions present in a message indicate the apparent intensity level of the attitudinal position of the message source. Since the hesitancy expressed in a message should somehow be reflective of the hesitancy of its author, these language style variables could be used to assess the level of uncertainty and intensity of feeling present in the writer.

It follows that sources required to encode counter-attitudinal arguments should be experiencing some hesitancy as well as some psychological stress or tension. It is the contention of the present study that the communication output of an encoder will be affected by the consistency or lack of consistency between the requirements of the task and the encoder's own attitudinal position.

Readability Research

Gynther (1957) reported that subjects in a high anxiety situation produce more disorganized, disrupted (less "efficient") communication output. This is consistent with Clevenger's (1959) summary of experimental research on tension or stage fright effects on speakers. Clevenger cites research literature which has attempted to quantify the disruptive effects of tension on communicators. It seems that disorganized communication (e.g. run-on sentences) would be more difficult to understand or comprehend. To this extent, a parallel can be found in the various discussions of what has been termed readability (Flesch, 1949; Klare, 1963). Readability has been proposed as an index of the ease with which potential readers can follow or understand a given message. Readability formulas (e.g. the Flesch measure) basically rely on two measures: average sentence length and number of syllables per hundred words.

In applying the prediction that cognitive stress leads to disruption of message output, Greenberg and Tannenbaum (1962) found that counter-attitudinally induced stress led to lower message readability scores. Following exposure to a cognitive stress-inducing situation, individuals encoded messages which contained more words per sentence and more syllables per hundred words.

Therefore, an additional message style measure which should be affected by the correspondence (or lack of correspondence) between required output and prior attitude would be the readability level of the message.

Hypotheses

There would appear to be at least two general dimensions along which encoding differences would be expected as a result of inconsistencies between source attitude and required message output: message production variables

(variables indicative of the rate and quality of message output) and message style variables (those indicative of differential style, expression or manner of content presentation).

Message Production Variables. It is predicted that the introduction of psychological stress or tension (brought about by the counter-attitudinal encoding requirements) will result in a general impairment of encoding performance.

Hypothesis 1: Counter-attitudinal encoding will result in slower rates of message production than will attitudinally-congruent encoding.

Hypothesis 2: Counter-attitudinal encoding will result in higher frequencies of message errors and alterations than will attitudinally-congruent encoding.

Message Style Variables. It is predicted that the writing style of encoders performing a counter-attitudinal task will differ from that of encoders writing under cognitively consistent conditions.

Hypothesis 3: Counter-attitudinal encoding will result in a decrease in the level of language intensity from that obtained under attitudinally-congruent conditions.

Hypothesis 4: Counter-attitudinal encoding will result in lower readability scores than will attitudinally-congruent encoding.

CHAPTER II

METHODS AND PROCEDURES

Overview

All experimental subjects wrote two messages, one which argued in accordance with and one in opposition to a previously stated opinion. Encoding style and performance variables were compared for each subject arguing counter-attitudinally and attitudinally-consistent, while controlling for order of encoding and attitude toward the issue. Each subject's mood and evaluation of the task was assessed immediately after completion of the required message tasks.

Subjects

Subjects (N=76) were obtained from an introductory business writing class at Michigan State University. The experimental encoding requirements were similar to the prior classroom experiences of these students, thus helping to provide motivation for satisfactory task completion.

Design and Analysis

Two independent variables were used: encoding conditions and topic evaluation. Each subject wrote messages in each of the two encoding conditions (counter-attitudinal and attitude-consistent). In addition, half the subjects addressed a positively evaluated topic, while the other half encoded messages concerning a negatively evaluated topic.

The overall design is in Figure 1, with each subject producing two messages, one counter-attitudinal and one attitude-congruent.

		Encoding Conditions	
		Counter- Attitudinal	Attitude- Consistent
Topic Evaluation	Positive (Group I)		
	Negative (Group II)		

Figure 1.

Message style and performance measures were obtained for each message in each of the four cells. Comparisons in terms of the dependent measures were made between the two encoding conditions. Results were analyzed separately for the two topics.

Procedures.

The experiment was preceded by a pretest which determined two suitable issues for the message encoding task.

Pretest Procedures. Two weeks before the actual experiment, a different group of subjects (N=74) completed a topic pretest. The pretest consisted of six opinion statements accompanied by five-interval rating scales (ranging from "strongly agree" to "strongly disagree"). Subjects indicated the extent of their agreement or disagreement with each statement. From this pretest, two

issues were selected for inclusion in the experiment. The topics chosen were the two most polarized (one most negatively, the other most positively). The most highly favored issue was: "The federal voting age should be changed so as to permit those 18 years of age and older the right to vote." The mean rating of this topic was 3.59 on a five-point scale, with a rating of one indicating strong disagreement and a rating of five indicating strong agreement. The most highly opposed issue was: "Television programming should be censored by a federal control board." This topic had a mean rating of 2.01 on the same five-point scale.

Experimental Procedures. Subjects (N=76) were randomly assigned to one of two experimental groups. Group I subjects (n=42) were instructed to encode messages (one message in opposition to the topic and one in support of the topic) which dealt with the "18 year old vote" issue. This was the issue toward which most subjects had expressed a favorable opinion. Group II subjects (n=34) encoded messages arguing on both sides of the "federal TV censorship" issue, the one toward which subjects had expressed a generally unfavorable attitude.

The order of encoding was counter-balanced in each group. Half the subjects in each topic group encoded counter-attitudinally at time 1 and attitudinally-consistent at time 2. The other half of each experimental group followed the opposite order.

Before the first encoding task, subjects responded to the two concepts selected from the pretest on five evaluative semantic differential scales: good-bad, valuable-worthless, fair-unfair, wise-foolish, and important-unimportant. Only one concept was relevant to a given subject's experimental treatment.

Next, subjects encoded the first message required by their topic-condition and order sub-group. Each subject was instructed to write a highly persuasive message which would be capable of convincing potential readers that the subject's assigned position was the more reasonable and justifiable one. The encoding task was introduced as part of a study on the way people use arguments in attempting to create effective messages of opinion, such as might be found in newspaper editorials. Subjects were given no time limit. The instructions used are in Appendix 1.

Subjects then were asked to respond to a number of mood scales (Greenberg, 1960) consisting of single adjectives accompanied by five-interval rating scales, ranging from "definitely applies to my mood" to "does not apply." Sample mood scale adjectives employed were: "insecure," "angry," "startled," and "tired." Subjects were also asked to rate the task on two five-interval rating scales ("difficult-easy" and "pleasant-unpleasant").

In the next class period, subjects encoded a message arguing on the opposite side of the issue which they had previously written about. Again, subjects were asked to write as persuasive a message as they felt they could and were permitted sufficient time to complete the task to their satisfaction.

Subjects then responded to the same mood and task evaluation scales which had been given at time 1. These instructions are in Appendix 2.

Independent Variables

Two independent variables were employed in the experiment. These were the conditions (that is, counter-attitudinal or attitude-consistent) in which subjects did their encoding and their evaluation of the topic to be written about (that is, whether subjects had a positive or a negative attitude toward the encoded issue).

Encoding Conditions. Each subject wrote both in congruence with and in opposition to his prior beliefs. The experimental measure of attitude toward the topic provided a means of checking the extent of each subject's evaluative polarity with respect to the issue he was writing about. This measure consisted of the two selected issues ("18 year old vote" and "federal TV censorship"), each accompanied by the five 7-interval rating scales mentioned above. Individual encoding characteristics thus were compared for each subject encoding under the two required encoding conditions.

Evaluation of the Topic. Group I subjects encoded messages arguing on both sides of an issue which was highly favored by these subjects. Group II subjects encoded messages which addressed an issue toward which the majority of subjects had expressed strong opposition. In this manner, individual encoding style and performance variables were then compared for each subject arguing counter-attitudinally as opposed to attitudinally-consistent, while controlling for the direction (positive or negative) of this argumentation. For half the subjects (Group I) counter-attitudinal encoding consisted of writing a proposition-attacking message. For the other half (Group II), the counter-attitudinal task required was that of writing a proposition-supporting message.

Control Variable

One variable was controlled -- the order in which the messages were encoded.

Order of Encoding. The possibility of encoding order effects was controlled for by randomly assigning subjects in each experimental group to two alternative encoding-order procedures. Approximately half the subjects in each group wrote counter-attitudinally at time 1 and attitudinally-consistent at time 2. The remaining subjects encoded in the reverse order.

DEPENDENT VARIABLES

Performance Variables

Two major measures of encoding performance were used. The rate of encoding (words per minute) and the number of encoding errors were ascertained for each message produced by each experimental subject.

Encoding Rate. Subjects were timed while performing the encoding task. After having filled out the experimental pretest, subjects all began the encoding task at the same time. Upon completing the message task, subjects were requested to raise their hands. At this time, the mood and task evaluation scales were given to each subject. Experimenters noted the time (in minutes) taken by each subject in writing his assigned message.

The length of the message (in total words) produced by each subject was ascertained and the individual encoding rate (in words per minute) was computed.

Encoding Errors and Changes. Three indices of the errors or changes made by subjects in the process of message production were employed. The number of spelling errors and the number of punctuation errors in each message was determined. In addition, the amount of editing apparent in each message was ascertained.

a. spelling errors. The number of spelling errors made by each subject in each message was determined. A spelling error was here defined as any spelling of a word other than that commonly accepted in a standard English dictionary.

b. punctuation errors. The number of gross punctuation errors made by each subject was determined for each message. Only major errors, such as failure to use periods or question marks when required, failure to capitalize properly, and omission of apparent commas and colons were counted.

c. editing. The number of occasions of editing within each experimental message was determined. Counted as indices of editing were: cross-outs of words or parts of words, evident corrections or re-tracings of letters or entire words, obvious erasures of words or parts of words, insertions of words or parts of words.

Message Style Variables

Two major variables were used as indices of the language style used by each encoder. These were the readability of each message and the level of language or message intensity.

Readability. The two indices of a message's level of readability originally suggested by Flesch (1949) are the number of words per sentence and the number of syllables per hundred words. For each experimental message, both indices were computed. The average number of words per sentence was determined and the number of syllables in the first hundred words of each message was ascertained.

Language Intensity. The polarization of the modifiers, the use of verb forms and the presence of ambivalence constructions in the messages written by the experimental subjects were measures of the language intensity level of each message.

a. modifier polarization. The number of high, moderate and low intensity qualifiers in each message was determined and the proportion of each modifier type (per total words) was computed.

The following general criteria were used in classifying adverbial or adjectival modifiers. High intensity modifiers were defined as those indicating extreme intensity, probability, frequency or temporal proximity. These were classifiable on the basis of quantitative values reported by Cliff (1959), Howe (1962; 1966), Lilly (1968a; 1968b) and Dodd and Gerbrick (1960). Ex-

amples of modifiers coded as high in intensity were: "extremely," "definitely," "certainly," "immediately," and "continually"). In addition, superlative forms of adjectives (e.g. "greatest," "biggest") were considered as highly polarized modifiers.

Moderate modifier polarization was reflected in the use of indefinite adverb and adjective qualifiers (such as "much" or "many"), by moderate level probabilistic, intensive, frequency or temporal proximity modifiers (e.g., "rather," "frequently," "soon"), and by comparative forms of adverbs and adjectives ("bigger," "happier").

Qualifiers of low polarization were defined as those indicating very low intensity, probability, frequency or temporal proximity (such as "slightly," "partially," "sometimes," "conceivably," "eventually").

b. use of verb forms. Three linguistic criteria were used to indicate the level of intensity in the verb forms of a given message. The apparent mood (held to be indicative of the polarity of the verb form), voice and tense of each verb were used to represent some aspect of the degree of definiteness and language intensity in the subject's communication output.

(a) verb polarization. The proportions of high, moderate and low polarity verbs (per total words) were computed for each message. Verbs implying conditionality (possibility, potentiality) were considered as expressive of low polarization or intensity. Verbs in the subjunctive mood, compound verbs with the modal auxiliary form indicative of hesitancy or conditionality (e.g. "might," "seems to," "appears to") and verbs in clauses preceded by "if" were classified as low in polarity. Clauses preceded by "perhaps" or "maybe" had the intensity values of the verbs contained in those clauses

reduced one level. In such instances, high intensity verbs were reduced to a rating of moderate, and moderate or low intensity verbs were reclassified as being of low polarity.

Moderate levels of verb polarity were indicated by qualified indicative mood forms wherein the auxiliary verb was not classifiable as low or high in apparent intensity. Examples of moderate intensity verbs are "ought to," "would" and "should" (that is, verb forms expressive of a higher level of probability and potentiality than that reflected by low intensity verbs).

High polarity verbs were those in the unqualified indicative mood (e.g. "to be," "to have," "to oppose," "to go"), verbs in the imperative mood ("beward!"), or those accompanied by auxiliary verbs which imply obligation or necessity (e.g. "must," "demands," "requires"). In addition, negation of several conditional verbs ("can not," "would not") resulted in the verbs being categorized as expressive of high intensity.

Complete coding instructions for the classification of the polarity level expressed by both modifiers and verbs may be found in Appendix 3.

(b) voice. The number of passive voice and active voice verbs in each message was determined and an activity ratio (N_a/N_a+N_p , where N_a was the total number of active verb forms and N_p was the total number of passive verb forms in each message) was computed.

(c) tense. The numbers of past, present and future tense verb forms present in each message was determined and the ratio of each verb tense (to total verbs) was calculated.

c. ambivalence constructions. The final index of the language intensity level in each message was the proportion of ambivalence constructions

(conjunctions of the form: "but," "still," "however," "although") per total words.

Individual Task and Mood Scale Ratings

Experimental subjects rated their personal feelings and reactions to their assigned tasks immediately upon completion of each encoding assignment. These measures served as a partial check on the adequacy of the experimental manipulations in inducing stress or anxiety.

Mood Scale Ratings. Subjects were asked to complete fifteen rating scales designed to index their mood or feelings when in the act of encoding. These rating scales consisted of single adjectives accompanied by five-interval rating scales on which subjects indicated the extent to which each adjective applied to their personal mood at the time of encoding (from "definitely applies to my mood" to "does not apply"). Mood adjectives were those used by Greenberg (1960) in assessing the extent of stress among groups of encoders. The author reported that five factors seemed most successful as indicants of cognitive stress. These factors, and the adjectives which best represented them, were:

Aggression	angry, defiant, rebellious
Anxiety:	startled, fearful, insecure
Deactivation:	drowsy, sluggish, tired
Social Affection:	affectionate, forgiving, kindly
Pleasantness:	pleased, lighthearted, refreshed

Increased stress is presumed indicable by increases in subjects' scores on the aggression and anxiety factors, and decreases on the deactivation, pleasantness and social affection factors.

Task Evaluation Ratings. After encoding each message, subjects rated the communication task on two 5-point rating scales: "very pleasant-very unpleasant" and "very difficult-very easy."

Readability

A coding form specifying the rules for classification of language intensity (both in verbs and modifiers) as well as the rules for syllable counts, errors and so forth was constructed, based on the general descriptions provided above. The form may be found in Appendix 3. Inter-coder reliabilities were determined by correlating alternative codings of randomly selected messages. This was done as a partial check on the coding form and the rules for classification.

CHAPTER III

RESULTS

This study examined the effects of counter-attitudinally induced stress on an individual's communication output. It was postulated that an increase in psychological stress would be manifested in specific changes in communication performance and style variables. In comparison with an individual's attitude-consistent performance, it was hypothesized that counter-attitudinally encoded messages would be produced at slower rates and would contain more encoding errors. It was further predicted that individuals, when writing in opposition to their prior attitudes, would produce messages which were less readable and contained elements indicative of lower levels of language intensity than messages produced by these same individuals under attitudinally-consistent conditions.

Each subject wrote two messages. One message argued in accord with a previously stated attitude. The other message argued in opposition to this attitude. Comparisons were made between the individual's performance and style characteristics under attitudinally-consistent conditions and those measures obtained when the individuals encoded counter-attitudinally.

Subject Attrition

Subjects (n=20) who wrote only one experimental message (that is, those who did not show up for part two of the experiment) were eliminated from the

analysis. The 20 were distributed equally from the two encoding topic conditions.

In addition, subjects ($n=11$) who, on the basis of the experimental pre-test topic rating, had a neutral attitude (mean rating of 4.0 over the five 7-point scales) toward their assigned topic were eliminated from further analysis. There did not seem to be any basis for determining which messages were counter-attitudinal and which attitude-consistent for these subjects.

Therefore, in the analyses, one group (the "18 year old vote" group) contained 26 subjects and the other group (the "federal TV censorship" group) had 19 subjects.

Coding Reliabilities

Forty messages of the 90 total, were randomly selected for either complete or partial recoding in order to assess intercoder reliabilities. The author originally coded all messages, while another coder was trained and did the recoding. At the time of coding, messages were not identified as to whether they had been produced by subjects arguing counter-attitudinally or attitudinally-consistent, so neither coder was aware of the experimental condition for a given message. Also, the second coder was unaware of the experimental hypotheses.

The results indicated a reliable coding procedure had been developed. Correlations of alternative codings of each of the nineteen dependent measures showed relatively high inter-coder agreement in almost every case. With respect to the coding of verb and modifier polarity (held to be critical as perhaps having a greater opportunity for subjective rating), the lowest of the twelve obtained correlations was .815 and eight of the correlations were above .90.

Only twice (of 33 checks made) did any obtained correlation fall below .80 (.564 for numbers of punctuation errors and .605 for numbers of passive voice verbs). In each case, the instances of coder disagreement and coding form ambiguity were discussed and rectified. Repeat correlations on additional sample messages provided acceptably high correlations (.884 for punctuation errors and .891 for passive voice verbs). Complete listings of the obtained reliability results are found in Appendix 4.

Performance Variables

The dependent measures of performance employed were encoding rate and message errors.

Encoding Rate. No specific time limit was imposed on the subjects. Of the total time available in the 50-minute class periods, the maximum time used by any one subject was 38 minutes. This would indicate that little if any time pressure seems to have operated on the encoders.

The mean rates of message production, in words per minute, are in Table 1. There was no significant difference in the rate at which individuals produced messages as a function of the consistency of required encoding performance with prior attitude. Also included in Table 1 are the mean times to encode, since subjects arguing counter-attitudinally could have produced messages at the same rate, but for less overall time than when they were producing attitude-consistent messages. No significant differences in total time spent encoding were observed, however.

Table 1.

	Message Topic	Required Message Output	
		Counter-Attitudinal	Attitude-Consistent
Mean Encoding Rate	"18 year old vote"	12.4	11.9
	"federal TV censorship"	11.8	11.6
Total Time to Encode	"18 year old vote"	22.2	22.5
	"federal TV censorship"	21.7	22.4

*Standard deviations for all variables are in Appendix 5.

Message Errors. Three main types of message errors and changes were used as indices of the possible effects of counter-attitudinally induced stress on encoding: punctuation errors, spelling errors and editing (cross-outs, erasures, insertions). In addition, an overall error score for each subject was computed by summing across the individual error indices. The results of a correlated t comparison of subject scores for the four error and change measures appear in Table 2. Overall, in seven of the eight comparisons, the direction of the difference is as predicted, although none of the differences achieve the .05 level of significance.

Table 2. Message Errors

	Message Topic	Required Message Output	
		Counter-Attitudinal	Attitude-Consistent
Punctuation Errors per Total Words	"18 year old vote"	.017	.014*
	"federal TV censorship"	.022	.021
Spelling Errors per Total Words	"18 year old vote"	.009	.007**
	"federal TV censorship"	.016	.015
Editing per Total Words	"18 year old vote"	.047	.050
	"federal TV censorship"	.101	.063*
Total Errors per Total Words	"18 year old vote"	.074	.072
	"federal TV censorship"	.139	.100*

* $p < .15$, by correlated t-test (one-tailed probability)

** $p < .10$

Punctuation Errors. The difference in individual counter-attitudinal and attitude-consistent message performance with respect to the number of punctuation errors committed per total words was not significant, although in the predicted direction ($p < .15$).

Spelling Errors. The counter-attitudinal and attitude-consistent messages did not differ significantly in the proportions of spelling errors, although the differences were in the predicted direction. In the case of the proposal of the 18 year old voting age, the probability value of the obtained correlated t approached significance ($p < .10$).

Editing. No statistical differences in the amount of total editing changes were observed.

Total Errors and Changes. A tendency ($p < .15$) was again observed for individuals (in both topic conditions) to make more total message errors when arguing counter-attitudinally than when writing messages with which they agreed.

Errors per Minute. In order to determine whether subjects possibly made more errors per unit of time spent encoding, the total number of message errors and changes made by each subject was divided by the amount of time the subject spent encoding. The results are in Table 3. In both topic conditions a tendency to make more errors per unit of time spent encoding ($p < .15$) was noted when subjects were encoding attitude-discrepant messages. Thus, there seems to be some evidence of performance decrement in terms of error rate (errors per minute) which occurs when individuals' counter-attitudinal writing performances are compared with their attitude-consistent message performances.

Table 3. Message Error Rate

	Required Message Output	
	Counter-Attitudinal	Attitude-Consistent
Message Topic		
"18 year old vote"	.876	.804*
"federal TV censorship"	1.141	1.003*

* $p < .15$, by correlated t -test

Message Style Variables

Comparisons of the two major categories of style variables (readability and message intensity) are presented below.

Readability. Two measures of readability were used in the present study: mean sentence length and total syllables per first 100 words. Results of the readability comparisons are in Table 4.

Table 4. Readability Measures

	Message Topic	Required Message Output	
		Counter-Attitudinal	Attitude-Consistent
Mean Sentence Length	"18 year old vote"	20.8	21.4
	"federal TV censorship"	18.3	18.3
Syllables per 100 Words	"18 year old vote"	149.6	147.6
	"federal TV censorship"	158.2	155.2

a. sentence length. No significant differences in the numbers of words per sentence were found between the message conditions.

b. syllables per first hundred words. No significant differences were noted in the numbers of syllables in the first hundred words of the experimental messages.

Language Intensity. Three chief indices of the level of intensity used by each encoder in writing his two required messages were used: modifier polarization (proportions of high, moderate and low polarity modifiers), use of

verb forms (polarization of encoder language indicable by verb polarity, voice and tense) and ambivalence constructions.

a. modifier polarization. Results obtained from the comparisons of individuals counter-attitudinal and attitude-consistent message output are in Table 5. Contrary to hypothesis, no increased usage of highly polar modifiers was found when the individual subjects wrote attitudinally-congruent messages. An inconsistent pattern was found in the case of low polarity modifiers. Subjects writing on the federal TV censorship issue tended to use more low intensity modifiers when writing in accord with their previously expressed attitudes ($p < .15$), whereas it had been predicted that these subjects would use less low intensity modifiers when encoding attitude-consistent messages. Subjects writing on the 18 year old vote proposition, however, conformed more with the experimental hypotheses, with a tendency ($p < .15$) to encode more low intensity modifiers when writing counter-attitudinal messages.

b. use of verb forms. Three indices of the language intensity present in the verb forms used by each subject are presented below: verb polarization, verb voice and verb tense.

(a) verb polarization. Comparisons were made of the extent of each subject's usage of high, moderate and low polarity verb forms, as indexed chiefly by the apparent mood of the verbs contained in the messages produced by the subjects. The findings are in Table 6. As hypothesized, there was a tendency in each topic condition for greater usage of highly polar verb forms by individuals encoding under attitudinally congruent conditions than was observed under counter-attitudinal conditions. In the case of the TV censorship issue, this difference was $p < .15$. No significant differences were found in the usage of low polarity verb forms.

Table 5. Modifier Polarity

	Message Topic	Proportion (per total words)	
		Counter-Attitudinal	Required Message Output Attitude-Consistent
High Polarity Modifiers	"18 year old vote"	.023	.022
	"federal TV censorship"	.026	.029
Moderate Polarity Modifiers	"18 year old vote"	.038	.040
	"federal TV censorship"	.032	.026
Low Polarity Modifiers	"18 year old vote"	.009	.007*
	"federal TV censorship"	.008	.010*

* $p < .15$, by correlated t-test

No prediction had been made as to the possible use of moderately polar verb forms, but, when addressing the TV censorship topic, subjects used significantly more ($p < .05$, two-tailed) moderately polar verbs when arguing counter-attitudinally than they did when arguing attitudinally-consistent.

Table 6. Verb Form Polarization

	Message Topic	Proportion (per total words)	
		Required Message Counter-Attitudinal	Output Attitude-Consistent
High Polarity Verbs	"18 year old vote"	.067	.068
	"federal TV censorship"	.063	.068*
Moderate Polarity Verbs	"18 year old vote"	.025	.026
	"federal TV censorship"	.028	.022**
Low Polarity Verbs	"18 year old vote"	.014	.012
	"federal TV censorship"	.018	.018

* $p < .15$, by correlated t-test

** $p < .05$

(b) verb voice. Results of the verb voice comparisons are listed in Table 7. A generally greater proportion of active verbs was used in messages encoded by subjects writing in accord with their beliefs. This trend was found for both the TV censorship issue ($p < .10$) and for the 18 year old vote issue ($p < .20$).

Table 7. Verb Voice

Message Topic	Proportion (per total verbs)	
	Required Message Counter-Attitudinal	Output Attitude-Consistent
"18 year old vote"	.88	.89
"federal TV censorship"	.87	.91*

* $p < .10$, by correlated t-test

(c) verb tense. An inconsistent pattern was found in terms of the verb tense variable, as in Table 8. For subjects addressing the TV censorship proposition, there was some tendency to use relatively more present tense verb forms when arguing in accord with prior attitudes ($p < .20$). This trend is as predicted. For the 18 year old vote issue, however, the opposite tendency was found, with messages encoded under attitudinally-consistent conditions containing somewhat fewer ($p < .15$) present tense verb forms. This latter trend is opposite to the experimental predictions.

c. ambivalence constructions. Contrary to expectation, there was apparently no greater usage of conjunctions classifiable as "ambivalence constructions" when individuals argued counter-attitudinally as opposed to attitudinally-consistent. The findings of this comparison are in Table 9.

Table 8. Verb Tense

	Message Topic	Proportion (per total verbs)	
		Counter-Attitudinal	Attitude-Consistent
Present Tense Verbs	"18 year	.850	.811*
	"federal TV censorship"	.870	.898
Past Tense Verbs	"18 year old vote"	.120	.161*
	"federal TV censorship"	.068	.058
Future Tense Verbs	"18 year old vote"	.029	.032
	"federal TV censorship"	.060	.044

*p < .15, by correlated t-test

Table 9. Ambivalence Construction

Message Topic	Proportion (per total words)	
	Counter-Attitudinal	Attitude-Consistent
"18 year old vote"	.006	.007
"federal TV censorship"	.003	.003

Summary

An examination of the encoding performance and style variables employed indicates an overall tendency for the experimental predictions to be borne out, at least in terms of direction, if not amount, of change. Across the total of 34 possible message comparisons, the differences between the attitude-consistent and counter-attitudinal measures were in the predicted directions in 23 of the cases.

Combined Analysis

A number of the predicted relationships approached significance. Failure to obtain statistical levels of significance could be due in part to the relatively small number of subjects in each of the topic categories. Combining subjects across these categories could both increase cell size and permit an extended examination of relationships. We subsequently compared the attitude-consistent and counter-attitudinal message outputs of all subjects, regardless of topic category, for the following major performance and style variables: production rate, total message errors, error rate, high and low polarity modifiers, high and low polarity verbs, active voice verbs, present tense verbs, words per sentence and syllables per first hundred words. The results of this analysis are in Table 10.

Table 10. Combined Data Analysis

Variable	Required Message Output	
	Counter-Attitudinal	Attitude-Consistent
Production Rate (words per minute)	12.2	11.7
Total Errors (per total words)	.102	.084*
Error Rate (per minute)	.988	.888***
High Polarity Modifiers	.024	.025
Low Polarity Modifiers	.010	.010
High Polarity Verbs	.065	.068
Low Polarity Verbs	.015	.014
Active Voice Verbs	.872	.899**
Present Tense Verbs	.859	.848
Words per Sentence	19.7	20.1
Syllables per 100 Words	153.2	150.8

* $p < .15$ ** $p < .10$ *** $p < .05$

Eight of the eleven hypothesized differences are in the predicted directions. Of the seven differences with probabilities of less than .25, six were in the direction hypothesized. One difference reached significance. Subjects made significantly more ($p < .05$) errors per minute of time spent encoding when they wrote counter-attitudinally than they did when they wrote attitude-consistent messages. Two of the differences approached significance. Subjects tended to make more errors per total number of words encoded ($p < .15$) when writing attitude-discrepant messages. There was also a tendency for subjects to use relatively more ($p < .10$) active voice verbs (and, hence, fewer passive verbs) when writing messages with which they agreed.

Thus, although the general production rate does not show the performance decrement usually accompanying increased stress, both total error measures (errors per total words and errors per unit of time spent encoding) provide evidence that some disturbance of encoding performance has occurred in the situation where subjects are encoding attitude-discrepant messages.

Also, there is some support for the proposition that, when arguing counter-attitudinally, subjects use somewhat less intense language than when they are arguing in accord with their prior beliefs. The tendency toward less intense language is evidenced by a decrease in the percentage of active voice verbs used ($p < .10$). These tendencies, while they do not reach statistical significance at the .05 level, do show some overall trend in the predicted direction.

Sign Test Analysis

There is the possibility that a small number of individuals undergoing relatively large changes could have distorted the results so as to either inflate

or deflate the mean group differences. In order to determine the degree to which the changes in each individual's communication behavior corresponded to the experimental predictions, a sign test (Siegel, 1956) was performed on the data. The results of this additional analysis closely parallel those previously reported. Combining across topic-conditions, four of nineteen comparisons by sign test were significant ($p < .05$) and correctly predicted: low intensity verbs per total words, high intensity verbs per total words, active voice verbs per total verbs, and total errors made per minute. Therefore, all variables found to be significant in the parametric analysis of combined topics were significant by sign test. The variable of low intensity verbs per total words was significant in this analysis, but not in any of the parametric analyses.

Intensifier Ratios

Our final analysis compared the percentages in each message of total classifiable modifiers or verbs which were of high or low intensity. Rather than determine the proportion of a given modifier or verb type per total words, it was decided to examine the percentage of verbs or modifiers used which were of a given level of polarization or intensity. In other words, the analysis was designed to ascertain, for example, how often, when the subject used a modifier it was a high intensity modifier or, when the encoder chose a verb it was a highly polar verb. Comparisons of these "intensifier ratios" (proportions of total verb or modifier intensifiers which were of a specific polarity level) were made for each subject's counter-attitudinal and attitude-consistent messages. Comparisons were made disregarding topic-conditions, thus

permitting the determination of any topic-free trends in counter-attitudinal and attitude-consistent encoding. These results are in Table 11.

Table 11. Intensifier Ratios

Ratio	(combined data)	
	Required Message Counter-Attitudinal	Output Attitude-Consistent
High Polarity Modifiers per total modifiers	.361	.384
Low Polarity Modifiers per total modifiers	.132	.122
High Polarity Verbs per total verbs	.598	.644*
Low Polarity Verbs per total verbs	.146	.128

*p < .05

The mean ratio differences in each of the four cases (as tested by means of a correlated t test) are in the predicted directions. One difference was statistically significant. When encoders used verbs, they used more highly polarized verbs in their attitudinally-congruent messages than they did in their counter-attitudinal messages. The mean differences are, however, all consistent with the experimental predictions.

Analysis of Variance Results

The use of the correlated t test to determine attitude-consistent vs. counter-attitudinal differences may be conservative as perhaps permitting a larger error term than the experimental design actually requires. Thus, treatment by levels by replication F tests ("Case II" in Winer, 1962) were done on each of the 24 dependent style and performance measures. The findings from this three factor analysis of variance with repeated measures are in Appendix 6.

The results of this additional analysis parallel the t-test findings. With respect to the counter-attitudinal vs. attitudinal-consistent differences, encoders were found to use relatively more verbs per total verbs used ($p < .10$) and more passive voice verb forms ($p < .10$). No significant differences were found as a function of encoding order. Several topic differences were noted. However, since there were no controls for degree of positiveness or negativity of each issue, or for degree of encoder ego-involvement or topic salience, interpretation of these topic difference findings cannot be conclusive. The discussion chapter further discusses these latter results.

Individual Mood and Task Ratings

Two indices of subjects' individual reactions to the required encoding tasks permitted comparisons of the attitude-consistent and counter-attitudinal encoding situations: mood scale ratings and task evaluation ratings.

Mood Scale Ratings. The differences between individual ratings of their own mood or feelings when writing counter-attitudinal messages and their feelings when writing attitude-congruent messages are listed in Table 12. For neither topic condition did the differences in subjects' scores on any of the five

mood factors (aggression, anxiety, deactivation, social affection, pleasantness) approach significance.

The data are presented in Table 12 in terms of mean factor scores for subjects within each topic condition. A score of 3.00 would indicate minimum perceived applicability of the adjectives within each factor and a score of 15.00 maximum perceived applicability.

Table 12. Mood Scale Ratings

Mood Factor	Message Topic	Required Message Output	
		Counter-Attitudinal	Attitude-Consistent
Aggression	"18"	5.42	5.81
	"TV"	5.84	5.63
Anxiety	"18"	4.50	4.62
	"TV"	4.90	4.47
Deactivation	"18"	7.19	6.38
	"TV"	7.32	7.32
Social Affection	"18"	5.88	5.92
	"TV"	5.37	4.74
Pleasantness	"18"	6.96	7.19
	"TV"	6.21	6.42

Topic Evaluation Ratings. Table 13 presents the results of subjects' task pleasantness and difficulty ratings. Data are presented in terms of mean scale ratings, on a five-point scale, within each topic condition. Higher mean scores indicate more favorable task evaluations (i.e., more pleasant, less difficult).

Table 13. Task Evaluation Ratings

Evaluation Scale	Message Topic	Required Message Output	
		Counter-Attitudinal	Attitude-Consistent
"unpleasant-pleasant"	"18"	3.16	3.60*
	"TV"	3.53	3.42
"difficult-easy"	"18"	2.52	3.24**
	"TV"	3.21	3.00

* $p < .10$ ** $p < .005$

For the 18 year old vote proposition, as predicted, subjects rated the task of writing an attitude-consistent message as significantly easier ($p < .005$) and somewhat more pleasant ($p < .10$) than they rated the counter-attitudinal task.

On the federal TV censorship issue, there were no significance differences in subjects' task ratings.

CHAPTER IV

DISCUSSION

Summary

The present investigation attempted to assess the effects of cognitive stress, induced by requiring attitude-discrepant communication behavior, upon message output. Hypotheses were based on previous investigations into the consequences of psychological stress on performance and from research relating to language intensity as an indicant of author hesitancy or uncertainty. It was generally predicted that a counter-attitudinal encoding situation would produce measurable deviations from an individual's customary (attitude-consistent) encoding behavior in terms of an impairment of encoding performance and a decrement in expressed language intensity.

Procedures. Experimental subjects were divided into two groups. One group addressed a proposition previously found to be a generally favorable one. The second group encoded messages concerning a negatively evaluated proposition. Each subject encoded two messages, one in opposition to his prior attitudes and one in accord with those attitudes. The order in which the messages were encoded was controlled for. There was no time limit placed on the task.

Comparisons of encoding performance and style variables were made between the two messages produced by each encoder. In addition, comparisons were made of the subjects' personal mood and task evaluation ratings.

Message Production Measures. No significant difference was found between an encoder's counter-attitudinal and attitude-consistent message production rates. This was contrary to expectation. Subjects arguing counter-attitudinally used no less time and encoded no more slowly than these same subjects arguing in accord with their attitudes.

There was a tendency ($p < .15$) for subjects to make relatively more message errors and alterations when writing counter-attitudinally. Although the differences in numbers of errors made (punctuation, spelling, editing, total errors) per total words encoded did not reach acceptable levels of significance, the direction in each case was in accord with predictions.

In addition, an examination of the rate of error production (per minute of time spent encoding) showed an overall significantly greater rate of errors for counter-attitudinally encoded messages.

Message Style Measures. Contrary to hypothesis, no significant differences or consistent trends were observed for the message readability measures (words per sentences and syllables per first hundred words). According to the measures employed, subjects' counter-attitudinal messages were no less readable than their attitude-consistent messages.

Limited support was found for the language intensity hypothesis. In terms of the polarity of the verbs used in each message, all analyses showed a consistent tendency for individuals arguing counter-attitudinally to somewhat use fewer high intensity verb forms.

There was also, for both topics and in all analyses, a tendency for subjects to use relatively fewer active voice verbs (and thus more passive voice verbs) when writing counter-attitudinal messages than when writing attitude-consistent messages.

No difference between counter-attitudinal and attitude-consistent messages was found in the relative numbers of present tense verb forms used.

Analysis of the counter-attitudinal vs. attitude-consistent message differences in percentages of high and low polarity modifiers per total words and per total modifiers showed consistent, though not significant, trends in the expected directions.

No significant difference was found in the usage of ambivalence constructions as a function of subjects' agreement or disagreement with their required message output.

Mood and Task Ratings. No significant differences in subjects' rated feelings or mood after encoding were observed.

For the positively-evaluated topic, subjects, as expected, rated the counter-attitudinal task as more difficult and somewhat less pleasant than their attitude-consistent task. This difference was not found for subjects writing messages about the negatively-evaluated proposition.

Conclusions. From the data reported, it might be concluded that the theory upon which the experimental hypotheses were based is in error. There are, however, several points which would argue against this interpretation.

With respect to the performance measures, there is some indication that the expectation of performance quality decrement as a function of counter-attitudinally induced stress is warranted. Not only does the prior research noted earlier consistently report such debilitation, the error measures employed in the present investigation all seemingly evidence this general trend. While not attaining statistical levels of significance, the consistency of the findings seems noteworthy.

The data do not provide support for the readability predictions. No significant differences in encoders' measured readability levels were observed as a function of cognitive stress.

There does appear to be, however, at least some limited support for the language intensity predictions. Again, rather than the actual size of the differences, it is the consistency of the direction of these differences which bears mention. The language intensity predictions seem generally to have been born out for the encoders' usage of verb forms. This support is not evident for their use of modifiers and ambivalence constructions.

Unresolved Issues

Plausible reasons for the failure to completely confirm the experimental predictions will be discussed here.

Methodological Shortcomings. Three potential areas where methodological problems could have arisen are listed below: individual variance, stress measures and style measures.

a. individual variance. One problem lies with the observed variance. There was apparently some greater variation in individual style and performance measures as a result of the increase in cognitive stress. As may be seen from the standard deviations listed in Appendix 5, in 29 of 47 cases, the variance among individuals arguing counter-attitudinally is larger than the variance observed when these same individuals wrote attitude-consistent messages. This increase in variance across all comparisons is statistically significant ($p = .032$, by sign test). However, in only 2 of 48 such comparisons is there significant heterogeneity of variance.

Thus, it is possible that the induction of stress increases the variability in performance and style measures. That is, encoders may become less organized and predictable in terms of their encoding behavior. This increase in variance among counter-attitudinal encoders may mitigate somewhat against the probability of obtaining significant differences. The general trend seems to be in the direction of lower performance quality and decreased language intensity. The increase in within-cell variation, also seemingly a result of cognitive stress, may however be masking the extent of this trend.

b. stress measures. One possible problem would seem to be the measurement (or lack of measurement) of the stress induction. No direct manipulation check was used, for several reasons. A more adequate check of the success in inducing psychological stress would have attempted measurement immediately after subjects received the counter-attitudinal message task. It was believed, however, that such a measure might contribute more to subjects' perceptions of the artificiality of the encoding situation than it would to the measurement of stress. Because we wished subjects to write as "normally" as possible, and, since the time measure from reception of message task instructions to completion of task would have been further complicated by an intervening task, the existence of stress was assessed only after message production.

That decision gives rise to several problems. The encoding process itself may be somewhat stress-reducing, as suggested by Greenberg (1960) and by Lynch (1963). Thus the post-encoding measurement could have been measuring lesser amounts of stress than were actually created by the experimental task.

The instructions attempted to overcome this problem by asking subjects to rate their feelings not as they now felt, but as they had previously felt, when writing their assigned messages. Still, the possibility remained that there was a reduction of stress occurring as a result of the message-encoding process. This might account for the failure to find significant differences in the level of post-message stress.

Of more general concern is the adequacy of the instrument itself. The stress measure, originally suggested by Nowlis and Green (1957) and subsequently used by Greenberg (1960) has not been otherwise widely used or accepted as a measure of cognitive stress. This objection might be noted for any measure proposed, however. There seems to be no adequate measure of the internalization of "cognitive stress." The existence of stress is customarily inferred on the basis of the stimuli introduced and the behavior change observed (e.g., Osgood, 1957; Lazarus et al., 1952). There is an apparent lack of consensually accepted, reliable means of measuring stress.

c. message style measures. Further methodological considerations exist in the manner in which the style of each message was quantified. There seemed to be no way to avoid the necessity for some subjective decision-making, due to the variables selected for consideration. However, the problem here does not seem to be one of lack of reliability in the measures despite the inherent subjectivity in the measurement of style. The problem rather might lie with the alternative measures which could have also been used.

Is "language intensity" best measured by polarity or intensity of modifiers and verbs? What are the relative weights which should be assigned to each element? Are verbs more important than modifiers as indicants of the uncertainty or

strength of feeling in a message source -- if so, how much more? What of the nouns used by each encoder? No analysis was made of the nouns used, because there appears to be no available scheme for noun classification in terms of evaluative polarity.

Although the theoretic prediction of a counter-attitudinally induced decrement in language intensity is clear, there seem to be only relatively indirect measures of this intensity. Any number of different measures or ratios might also have been used as perhaps being indicative of language polarity. Perhaps the "concreteness" or "abstractness" of nouns (see Flesch, 1950; Gillie, 1957; Haskins, 1960) bears some relationships to what this study has discussed as language intensity. To the extent that concrete nouns are less ambiguously interpreted by receivers, they may provide an additional index of the certainty or opinion polarization apparent in an assertion.

Perhaps the degree of modification of nouns (adjectives/nouns) or verbs (adverbs/verbs) or some combination might also serve as useful indices of the hesitancy expressed in an author's statements. Boder's "adjective-verb quotient" (1940) and Dollard and Mowrer's "discomfort-relief quotient" are additional comparisons which might have been made. An examination of lexical diversity (e.g. extent of common words or of function vs. content words, as discussed by Rommetveit, 1968), a comparison of message "cloze" scores (as proposed by Taylor, 1953) and/or a look at the usage of personal pronouns (suggested by Ruesch, 1953) would have been other possible considerations.

We chose only those measures with some prior empirical basis for expecting a fairly direct relationship with language intensity. This does not rule out the possibility of other, equally important message intensity indices. However,

due to the apparent lack of available research which has systematically linked message elements to receiver judgments of hesitancy, intensity or strength, there has been no satisfactory determination of the most sensitive measures of intensity.

Theoretical Problems. All hypotheses were made on the basis of predictions that a certain type of psychological stress (i.e. counter-attitudinally induced stress) would produce specific, measurable effects on an individual's encoding behavior. The problem at this point is whether or not "stress" was actually generated by the experimental task requirements and, indeed, whether stress is the only, or even the best, theoretic explanation for the observed results.

With respect to the first part of this problem (whether stress was actually created), one is forced to argue from the obtained results. There appears to have been a general performance decrement when encoders wrote in opposition to their beliefs. In addition, for one of the two topics, the task evaluation ratings showed subjects perceived the counter-attitudinal task as more difficult and less pleasant. These findings would support the statement that there was greater stress in the counter-attitudinal condition than in the attitude-consistent condition.

What would appear to be the basis for this stress? It seems reasonable that subjects would know less about the existing arguments which oppose their own attitudes. Although there were apparently no fewer total words encoded by subjects when they wrote counter-attitudinally, there may well have been some difference in the numbers or diversity of arguments employed or even in the proportions of content vs. function words used. To the extent that one knows less about what one is instructed to write on, some stress should exist.

It also seems that subjects would not be accustomed to writing counter-attitudinally. Perhaps it is the novelty of the task requirements which accounts for the change in writing behavior. This also may be a partial source of the psychological stress posited in the present study.

Does an encoder tend to use relatively more low intensity words in a counter-attitudinal situation because of the situational novelty or because of some lack of information about the other side? Is low intensity language a result of some personal hesitancy, discomfort or uncertainty which one feels about writing things he does not believe? Does an encoder write less intense messages because stress situations cause one to be less likely to use strong or intense language, or perhaps because of a tendency to encode statements with which one can more easily agree, as is suggested by "assimilation-contrast" theory (as discussed by Sherif and Hovland, 1961)?

It does not appear possible to adequately separate out the more likely of these causes from the less likely, at least in the present study. Perhaps they are not actually separable, given the present measurement capabilities. This may well be a problem for future research and measurement refinement. For the present experiment, one can merely speculate as to the most probable bases for the stress that was apparently generated.

Research Implications

Why study the counter-attitudinal encoding situation? First, the situation apparently has several "real-life" counterparts. It is not merely a contrived experimental situation. Professional encoders (editorial writers, speech writers, advertising copy writers) may be assigned a specific task of writing messages with which they do not personally agree. It would seem logical

that such an occasion should result in differences from an individual's more normal encoding behavior. The present study begins to specify some of the probable differences.

It appears that an encoder's prior attitudes influence how and what he writes. The people who assign encoding tasks do not customarily take account of the attitudes of the prospective encoders, however. To the extent that professional encoders behave similarly to the way college business writing students do (and this is a subject for future inquiry), the present study would provide some support for the contention that encoders' attitudes should be considered. These attitudes should be considered, that is, if increased errors and decreased intensity produce a less desirable message, one which conforms less well to the hoped-for communication output.

Prior research indicates that messages of the type more likely produced by encoders who do not agree with the output required of them would be less effective. Greenberg and Razinsky (1966) found that increased numbers of spelling, punctuation and grammatical errors, at least at extreme levels, resulted in decreased evaluations of message logic and clarity as well as decreases in receiver ratings of source competence and trustworthiness. In addition, the authors found decrements in the amount of information gained as a function of high numbers of message errors.

McEwen and Greenberg (1969b) reported lower ratings of message clarity and a generally lower evaluation of the message source when receivers rated messages employing low intensity language (low polarity verbs and modifiers).

Thus it would seem that the increased errors and decreased language intensity observed as a result of counter-attitudinally induced stress would have some significant effects on the probable impact that these sorts of messages would have.

A logical extension of the present study would be an investigation of the effectiveness of counter-attitudinally encoded messages (as opposed to messages produced by attitude-consistent encoders) among groups of receivers. Do the differences noted in message intensity make a significant difference to readers of that message? Does the difference in message effectiveness depend upon the potential receivers of the messages? Perhaps audiences who are highly opposed to the message proposal are more persuaded by the less intense messages encoded under counter-attitudinal conditions (as in a "soft sell"). Highly intense messages may be more effective among people who are in agreement with or neutral toward the message proposition.

Further research could compare messages on the same side of an issue, differing only in whether or not the encoders who produced the messages agreed with the message proposition. This might point out the extent to which the observed message differences are meaningful differences, with respect to their effects on attitude change toward source, message and topic as well as their effects on other dependent measures (e.g. comprehension and retention).

Messages could also be compared in terms of exposure probabilities. To the extent that language intensity corresponds to the concept of stimulus intensity, some effect on the amount of initial attention paid to messages in a voluntary exposure situation would be expected. Again, there would be the opportunity to assess the meaningfulness of the observed message differences -- are the differences great enough to produce noticeable differences in the probability that receivers will pay attention, either initially or over a period of time, to a given message?

As mentioned before, much research has been devoted to the determination of the factors influencing the amount of self-persuasion following belief-discrepant

communication behavior. Little has been done in the way of analyzing the communication behavior produced. A specification of the important message variables reflective of individual attitudinal states should provide correlates which would aid in the investigation of attitude change. For instance, it would be possible to examine the relationship between extent of attitude change (i.e. self-persuasion) and encoding style change. The difference between an encoder's attitude-consistent and counter-attitudinal message intensity levels might provide a clue to the amount of personal inconsistency he is undergoing. It may be that larger deviations from normal encoding styles are indicative of greater dissonance and hence greater subsequent attitude change. On the other hand, perhaps greater style deviations provide an alternative mode for the reduction of inconsistency or dissonance and thus less attitude change could result. An investigation of this research area should thus allow for some predictions of amount of probable attitude change on the basis of observed message style alterations.

The present study found significant differences in encoding style and performance characteristics as a function of the topic on which subjects wrote. As reported in Appendix 6, a number of significant differences occurred between the measures obtained from the encoders writing on the 18 year old vote issue and those writing on the federal TV censorship issue. Due to the lack of suitable controls, any conclusions here must be only tentative.

A number of the differences seem attributable to the particular nature of the encoding requirements inherent in these two issues. For instance, subjects made more spelling errors and used relatively more syllables per hundred words when writing messages addressing the federal television censorship proposition.

This seems reasonable merely as a result of "television censorship" being more difficult to spell and containing more syllables per word than "18 year old vote." What is more interesting is the fact that encoders writing on the TV censorship issue used more low intense verb forms, fewer ambivalence constructions, more future tense and fewer past tense verb forms than those writing on the 18 year old vote proposal.

The present study did not, however, attempt a systematic examination of encoding differences as a function of message topic. This area seems a subject for future inquiry. There did appear, in the present study, to be a relatively greater tendency to conform to experimental predictions among encoders writing on the "18 year old vote" issue. Assuming that this issue was more salient or meaningful for college students, some future research hypotheses might be generated.

Further research might examine messages addressed to different issues, varying in extent of ego-involvement with either greater or lesser variability in encoder attitude than was presently employed. One might look at differences in messages arguing on mildly polarized or salient topics, as opposed to the language differences in messages addressing highly polarized or salient issues. Thus, it might be possible to determine whether or not topic salience, for example, has an effect on the degree to which individuals modify their encoding performances when writing counter-attitudinally.

An examination of the act of writing a positive (proposition-favoring) as opposed to that of writing a negative (anti-proposition) message could also be undertaken. How does the language intensity level, for example, of an encoder differ when he is writing a negative message from what it is when he is writing a positive message? It may be that individuals generally use more intense

language when writing messages of condemnation. Encoders may customarily employ more polarized and emphatic language when they attack an issue than they do when they praise an issue.

An examination of the encoding behavior of "neutral" people could also be accomplished. To what extent are the relationships between agreement or disagreement with required output and subsequent performance and style measures linear? Is the language intensity used by a counter-attitudinal encoder less than that used by a person who is neutral toward the message issue? Unfortunately, in the present study there were an insufficient number of encoders who were neutral toward the two topics to permit adequate analysis of this problem.

Only through additional research will such questions be answered. It is hoped that the present study at least has provided some impetus toward the research necessary to answer them.

References

- Allport, G.W. and L.J. Postman The basic psychology of rumor. Transactions of the New York Academy of Science, 1945, 8, 61-81.
- Appley, M.H. and R. Trumbull Psychological Stress. New York: Appleton-Century-Crofts, 1967.
- Berger, C.R. The effects of influence feedback and need influence on the relationship between incentive magnitude and attitude change. Unpublished Ph.D. dissertation, Michigan State University, 1968.
- Bettinghaus, E.P. and I.L. Preston Dogmatism and performance of the communicator under cognitive stress. Journalism Quarterly, 1964, 41, 399-402.
- Boder, D.P. The adjective-verb quotient: a contribution to the study of language. Psychological Record, 1940, 3, 309-343.
- Carlsmith, J.M., B.E. Collins and R.L. Helmreich Studies in forced compliance: I. the effect of pressure for compliance on attitude change produced by face-to-face role playing and anonymous essay writing. Journal of Personality and Social Psychology, 1966, 4, 1-13.
- Clark, H.H. Some structural properties of simple active and passive sentences. Journal of Verbal Learning and Verbal Behavior, 1965, 4, 365-370.
- Clevenger, T. Asynthesis of experimental research in stage fright. Quarterly Journal of Speech, 1959, 45, 134-145.
- Cliff, N. Adverbs as multipliers. Psychological Review, 1959, 66, 27-44.
- Dodd, S.C. and T.R. Gerbrick Word scales for degrees of opinion. Language and Speech, 1960, 3, 18-31.
- Dollard, J. and O.H. Mowrer A method of measuring tension in written documents. Journal of Abnormal and Social Psychology, 1947, 42, 3-32.
- Festinger, L. A Theory of Cognitive Dissonance. Stanford: Stanford University Press, 1957.
- Flesch, R. A new readability yardstick. Journal of Applied Psychology, 1948, 32, 221-233.
- Flesch, R. Measuring the level of abstraction. Journal of Applied Psychology, 1950, 34, 384-390.
- Gillie, P.J. A simplified formula for measuring abstractness in writing. Journal of Applied Psychology, 1957, 41, 214-217.

- Greenberg, B.S. Performance and message consequences of encoding behavior under cognitive stress. Unpublished Ph.D. dissertation, University of Wisconsin, 1960.
- Greenberg, B.S. and E.L. Razinsky Some effects of variations in message quality. Journalism Quarterly, 1966, 43, 486-492.
- Greenberg, B.S. and P.H. Tannenbaum Communicator performance under cognitive stress. Journalism Quarterly, 1962, 39, 169-178.
- Gynther, R.A. The effects of anxiety and of situational stress on communicative efficiency. Journal of Abnormal and Social Psychology, 1957, 54, 274-276.
- Haskins, J.B. Validation of the abstraction index as a tool for content-effects analysis and content analysis. Journal of Applied Psychology, 1960, 44, 102-106.
- Holsti, O. Computer techniques in content analysis: the measurement of qualities and performance. Paper presented to the National Conference on Content Analysis, 1967.
- Howe, E.S. Probabilistic adverbial qualification of adjectives. Journal of Verbal Learning and Verbal Behavior, 1962, 1, 225-242.
- Howe, E.S. Verb tense, negatives, and other determinants of the intensity of evaluative meaning. Journal of Verbal Learning and Verbal Behavior, 1966, 5, 147-155.
- Janis, I.L. and J.B. Gilmore The influence of incentive conditions on the success of role playing in modifying attitudes. Journal of Personality and Social Psychology, 1965, 1, 17-27.
- Johnson, M.G. Syntactic position and rated meaning. In L. Jakobovits and M. Miron, Readings in the Psychology of Language. Englewood Cliffs, N.J.: Prentice-Hall, 1967, 472-479.
- Klapper, J.T. The Effects of Mass Communication, New York: The Free Press, 1960.
- Klare, G.R. The Measurement of Readability, Ames: Iowa State University Press, 1963.
- Lazarus, R.S., J. Deese and S.F. Osler The effects of psychological stress upon performance. Psychological Bulletin, 1952, 49, 293-317.
- Linder, D.E., J. Cooper and E.E. Jones Decision freedom as a determinant of the role of incentive magnitude in attitude change. Journal of Personality and Social Psychology, 1967, 6, 245-254.

- Lilly, R.S. The qualification of evaluative adjectives by frequency adverbs. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 333-336.
- Lilly, R.S. Multiplying values of intensive, probabilistic and frequency adverbs when combined with potency adjectives. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 854-858.
- Lynch, M.D. Modes of resolution of cognitive inconsistency and mood-stress through communication activity. Unpublished Ph.D. dissertation, University of Wisconsin, 1963.
- McEwen, W.J. and B.S. Greenberg Effects of communication assertion intensity on congruity principle predictions. Journal of Communication, 1969 (in press).
- McEwen, W.J. and B.S. Greenberg Message intensity effects on receiver evaluations of source, topic and message. Paper presented to the annual convention of the National Society for the Study of Communication, 1969.
- Nowlis, V. and R. Green Papers presented to the 65th annual American Psychology Association convention, 1957.
- Osgood, C.E. Motivational dynamics of language behavior. In M. Jones (ed.) Nebraska Symposium on Motivation, 1957, 348-424.
- Osgood, C.E. The representational model and relevant research methods. In I. Pool (ed.) Trends in Content Analysis. Urbana: University of Illinois Press, 1959, 33-88.
- Osgood, C.E. Some effects of motivation on style of encoding. In T. Sebeok (ed.) Style in Language. Cambridge, Mass: M.I.T. Press, 1960, 293-306.
- Osgood, C.E. and E.G. Walker Motivation and language behavior: a content analysis of suicide notes. Journal of Abnormal and Social Psychology, 1959, 59, 58-67.
- Rommetveit, R. Words, Meanings and Messages. New York: Academic Press, 1968.
- Rosenberg, M.J. Some limits of dissonance: toward a differentiated view of counter-attitudinal performance. In S. Feldman (ed.) Cognitive Consistency. New York: Academic Press, 1966, 135-170.
- Sherif, M. and C.I. Hovland Social Judgment. New Haven: Yale University Press, 1961.
- Siegel, S. Nonparametric Statistics. New York: McGraw-Hill, 1956.

Tannenbaum, P.H. The indexing process in communication. Public Opinion Quarterly, 1955, 19, 292-302.

Taylor, W.L. "Cloze procedure": a new tool for measuring readability. Journalism Quarterly, 1953, 30, 415-433.

Winer, B.J. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1962.

APPENDIX 1

TIME 1 ENCODING TASK INSTRUCTIONS

Please write your name in
this box:

Department of Communication

Study of

Persuasion and the Use of Arguments

A study is now being conducted at M.S.U. on the way people go about persuading others. In order to help us determine how people use arguments, we are asking each of you to write what you feel to be a persuasive message.

We know that a person's attitude toward what he is writing about has an effect on his use of arguments. So, we would like you to first fill out the items on the next page which ask for your opinions toward some of the topics you may be asked to write about.

Please complete the items on the next page and, when finished, STOP so that we may begin the writing assignment together.

Please make a check mark on each scale according to how you personally feel toward the statements listed below.

"The federal voting age requirements should be changed so as to permit those 18 years of age and older the right to vote."

Wise _____:_____:_____:_____:_____:_____:_____ Foolish
 Very Quite Slightly Equally Slightly Quite Very

Worthless _____:_____:_____:_____:_____:_____:_____ Valuable
 Very Quite Slightly Equally Slightly Quite Very

Bad _____:_____:_____:_____:_____:_____:_____ Good
 Very Quite Slightly Equally Slightly Quite Very

Fair _____:_____:_____:_____:_____:_____:_____ Unfair
 Very Quite Slightly Equally Slightly Quite Very

Important _____:_____:_____:_____:_____:_____:_____ Unimportant
 Very Quite Slightly Equally Slightly Quite Very

"Television programming should be censored by a federal control board."

Wise _____:_____:_____:_____:_____:_____:_____ Foolish
 Very Quite Slightly Equally Slightly Quite Very

Worthless _____:_____:_____:_____:_____:_____:_____ Valuable
 Very Quite Slightly Equally Slightly Quite Very

Bad _____:_____:_____:_____:_____:_____:_____ Good
 Very Quite Slightly Equally Slightly Quite Very

Fair _____:_____:_____:_____:_____:_____:_____ Unfair
 Very Quite Slightly Equally Slightly Quite Very

Important _____:_____:_____:_____:_____:_____:_____ Unimportant
 Very Quite Slightly Equally Slightly Quite Very

 STOP. Do not go on to the next part until everyone has had an opportunity to
 finish this first section.

We would now like you to write a message which argues strongly IN FAVOR OF the following statement: "The federal voting age requirements should be changed so as to permit those 18 years of age and older the right to vote."

We realize that you may or may not agree with the position you are asked to take with regard to this issue. However, very often, especially as new members in an organization, you may be asked to write about things you do not completely support. This assignment is similar to the request which might be made of you if you were, for example, an advertising copy-writer or a newspaper editorial writer.

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that the minimum federal voting age should be 18 years old.

You may write as much as you feel is necessary to produce a convincing message. Also, take as much time as you need. We do not expect a perfect, finished copy from you in the limits of this one class period. Therefore, feel free to make any changes or corrections in the message as you proceed. Don't worry about how it looks, but what it says.

You can help us by doing as good a job as you think you can. We wish to thank you for your cooperation in this study.

Please RAISE YOUR HAND as soon as you have finished writing and editing your paper and we will collect your papers and give you a short opinion-aire to fill out.

Please begin writing.

We would now like you to write a message which argues strongly AGAINST the following statement: "The federal voting age requirements should be changed so as to permit those 18 years of age and older the right to vote."

We realize that you may or may not agree with the position you are asked to take with regard to this issue. However, very often, especially as new members in an organization, you may be asked to write about things you do not completely support. This assignment is similar to the request which might be made of you if you were, for example, an advertising copy-writer or a newspaper editorial writer.

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that the minimum federal voting age should not be lowered to 18 years.

You may write as much as you feel is necessary to produce a convincing message. Also, take as much time as you need. We do not expect a perfect, finished copy from you in the limits of this one class period. Therefore, feel free to make any changes or corrections in the message as you proceed. Don't worry about how it looks, but what it says.

You can help us by doing as good a job as you think you can. We wish to thank you for your cooperation in this study.

Please RAISE YOUR HAND as soon as you have finished writing and editing your paper and we will collect your papers and give you a short opinion-aire to fill out.

Please begin writing.

We would now like you to write a message which argues strongly IN FAVOR OF the following statement: "Television programming should be censored by a federal control board."

We realize that you may or may not agree with the position you are asked to take with regard to this issue. However, very often, especially as new members in an organization, you may be asked to write about things you do not completely support. This assignment is similar to the request which might be made of you if you were, for example, an advertising copy-writer or a newspaper editorial writer.

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that TV programming should be censored by a federal control board.

You may write as much as you feel is necessary to produce a convincing message. Also, take as much time as you need. We do not expect a perfect, finished copy from you in the limits of this one class period. Therefore, feel free to make any changes or corrections in the message as you proceed. Don't worry about how it looks, but what it says.

You can help us by doing as good a job as you think you can. We wish to thank you for your cooperation in this study.

Please RAISE YOUR HAND as soon as you have finished writing and editing your paper and we will collect your papers and give you a short opinion-aire to fill out.

Please begin writing.

We would now like you to write a message which argues strongly AGAINST the following statment: "Television programming should be censored by a federal control boad."

We realize that you may or may not agree with the position you are asked to take with regard to this issue. However, very often, especially as new members in an organization, you may be asked to write about things you do not completely support. This assignment is similar to the request which might be made of you if you were, for example, an advertising copy-write or a newspaper editorial writer.

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that TV programming should not be censored by a federal board.

You may write as much as you feel is necessary to produce a convincing message. Also, take as much time as you need. We do not expect a perfect, finished copy from you in the limits of this one class period. Therefore, feel free to make any changes or corrections in the message as you proceed. Don't worry about how it looks, but what it says.

You can help us by doing as good a job as you think you can. We wish to thank you for cooperation in this study.

Please RAISE YOUR HAND as soon as you have finished writing and editing your paper and we will collect your papers and give you a short opinion-aire to fill out.

Please begin writing.

NAME:

Your personal feelings can influence the manner in which you attempt to persuade others. Since we are concerned with the way a person uses arguments, we would like to know how you feel about the study you have just participated in. We would also like to know your personal feelings or mood as of this moment.

On the following pages are a number of items which ask for your own feelings about the study and your participation in it. Please turn the page and complete the items.

Please fill in the items below. Make one check mark on each scale according to how well you feel each adjective describes your mood or feelings when writing your assigned message.

	Definitely Applies to My mood	Somewhat Applies	Slightly Applies	Undecided	Does not Apply
SLUGGISH					
INSECURE					
STARTLED					
KINDLY					
REFRESHED					
DEFIANT					
DROWSY					
PLEASED					
AFFECTIONATE					
FEARFUL					
ANGRY					
LIGHTHEARTED					
TIRED					
FORGIVING					
REBELLIOUS					

Please turn the page and complete the items in the next section.

I feel that the writing task which I just completed was:

- ☐ Very Pleasant
- ☐ Somewhat Pleasant
- ☐ Half and Half
- ☐ Somewhat Unpleasant
- ☐ Very Unpleasant

I thought that the assignment was:

- ☐ Very Difficult
- ☐ Somewhat Difficult
- ☐ Half and Half
- ☐ Somewhat Easy
- ☐ Very Easy

APPENDIX 2

TIME 2 ENCODING TASK INSTRUCTIONS

NAME:

Persuasion and
The Use of Arguments
(Part II)

You have recently participated in part of a study on the ways people attempt to convince others.

As a further part of our study we would now like you to write another message, in much the same way as you did before.

Please turn the page, read the instructions, and begin.

Thank you for helping us again.

A number of you were asked in Part I of this study to write messages with which you personally did not agree. Some of you wrote messages with which you did agree. To make allowances for these differences in your personal attitudes, we would now like you to do the following.

We would like you to write a message which argues strongly IN FAVOR OF the following statement: "The federal voting age requirements should be changed so as to permit those 18 years of age and older the right to vote."

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that the minimum federal voting age should be 18 years old.

You may write as much as you feel is necessary and may take as much time as you need. Again, feel free to make any corrections or changes in the message as you proceed.

You can help us by doing as good a job as you think you can. Please raise your hand as soon as you have finished writing and editing your papers so that we may collect them. Thank you.

Please begin writing.

A number of you were asked in Part I of this study to write messages with which you personally did not agree. Some of you wrote messages with which you did agree. To make allowances for these differences in your personal attitudes, we would now like you to do the following.

We would like you to write a message which argues strongly AGAINST the following statement: "The federal voting age requirements should be changed so as to permit those 18 years of age and older the right to vote."

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that the minimum federal voting age should not be lowered to 18.

You may write as much as you feel is necessary and may take as much time as you need. Again, feel free to make any corrections or changes in the message as you proceed.

You can help us by doing as good a job as you think you can. Please raise your hand as soon as you have finished writing and editing your papers so that we may collect them. Thank you.

Please begin writing.

A number of you were asked in Part I of this study to write messages with which you personally did not agree. Some of you wrote messages with which you did agree. To make allowances for these differences in your personal attitudes, we would now like you to do the following.

We would like you to write a message which argues strongly IN FAVOR OF the following statement: "Television programming should be censored by a federal control board."

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that TV programming should be censored by a federal board.

You may write as much as you feel is necessary and may take as much time as you need. Again, feel free to make any corrections or changes in the message as you proceed.

You can help us by doing as good a job as you think you can. Please raise your hand as soon as you have finished writing and editing your papers so that we may collect them. Thank you.

Please begin writing.

A number of you were asked in Part I of this study to write messages with which you personally did not agree. Some of you wrote messages with which you did agree. To make allowances for these differences in your personal attitudes, we would now like you to do the following.

We would like you to write a message which argues strongly AGAINST the following statement: "Television programming should be censored by a federal control board."

Please write as strong and persuasive a message as you think you can. In other words, we would like you to write a message, with as much emphasis as possible, which could convince people that TV programming should not be censored by a federal board.

You may write as much as you feel is necessary and may take as much time as you need. Again, feel free to make any corrections or changes in the message as you proceed.

You can help us by doing as good a job as you think you can. Please raise your hand as soon as you have finished writing and editing your papers so that we may collect them. Thank you.

Please begin writing.

NAME:

We would like to know your personal feelings about this part of the study.
Please indicate, on the items listed on the following pages, your reactions.
Thank you.

Please fill in the items below. Make one check mark on each scale according to how well you feel each adjective describes your mood or feelings when writing your assigned message.

	Definitely Applies to My mood	Somewhat Applies	Slightly Applies	Undecided	Does not Apply
SLUGGISH					
INSECURE					
STARTLED					
KINDLY					
REFRESHED					
DEFIANT					
DROWSY					
PLEASED					
AFFECTIONATE					
FEARFUL					
ANGRY					
LIGHTHEARTED					
TIRED					
FORGIVING					
REBELLIOUS					

Please turn the page and complete the items in the next section.

I feel that the writing task which I just completed was:

_____ Very Pleasant
_____ Somewhat Pleasant
_____ Half and Half
_____ Somewhat Unpleasant
_____ Very Unpleasant

I thought that the assignment was:

_____ Very Difficult
_____ Somewhat Difficult
_____ Half and Half
_____ Somewhat Easy
_____ Very Easy

APPENDIX 3
MESSAGE CODING INSTRUCTIONS
AND CODING FORMS

CODING INSTRUCTIONS

Word Count: Count all words in each message. Numerals (e.g. 1776, 23, .05) each count as one word. Hyphenated words (jack-in-the-box) count as one word, as do all connected initials (NBC, NET, NCAA).

Sentence Count: Count as sentences only what the subject has grammatically marked off (by periods, question marks, exclamation points) -- do not interpret sentences.

Syllable Count: Count numbers of syllables as they are (orally) pronounced. When in doubt, sound the word out. Count numbers and initials as they are pronounced (e.g. 18 is two; 70 is three; NIT is three).

VERBS

Do NOT code infinitive forms (e.g. to go, to be, etc.) or gerund forms (going, being, having).

Active-Passive: Count as passive verb forms only those obviously in the passive voice (X was hit by the ball; censorship has been opposed by righteous people). All other forms are considered active.

Present-Past-Future: Count as PAST tense all verb forms, either simple or compound which are obviously past tense (e.g. was, had given, opposed, have been denied, have supported).

Count as FUTURE tense only those verbs accompanied by "will" or "shall" (e.g. I shall remain against; they will not pass; but NOT they would come).

All other forms are considered PRESENT tense verbs.

VERBINTENSITY:

HIGH: all unqualified indicative mood verb forms without auxiliary verbs (I go; he says; we find, I oppose, you have; but NOT used to go; tried to help; has found; was opposed)

also all imperative mood verb forms (look out, beware!)

also all obligatory auxiliary verb forms of the following types: must, have to, cannot, require, demand, insist, do.

Coding Instructions (2):

MODERATE Intensity verbs: all qualified indicative mood verb forms (including tenses other than the present when they have an auxiliary verb): used to ____; was ____; have ____; will ____; had ____.

Also, all auxiliary verb forms of the following types: ought to; would; should; plan to; mean to; like to. Also the following verbs: allows/permits; induces; believe; feel; think.

LOW Intensity verbs: all conditional and subjunctive verb forms, such as the following: can; could; might; may.

Also, verbs of the following type: seems to; appears to; tries/attempts to; help to; suggest/propose.

- NOTE:
1. verbs in clauses preceded by IF will all be coded as LOW in intensity.
 2. verbs in clauses preceded by PERHAPS or MAYBE will be decreased in intensity one level (such that: verbs formerly LOW will remain LOW; verbs formerly MODERATE will now be LOW; verbs formerly HIGH will now be coded as MODERATE).
 3. the particle NOT will not alter the intensity values of verbs normally coded as HIGH in intensity. Verbs originally coded as MODERATE will now be coded as HIGH; verbs originally coded as LOW will now be coded as follows:
 - HIGH: can not; could not
 - LOW: might not; may not
 - MODERATE: All others originally coded as low.

MODIFIERS

Code all modifiers (adverbs and adjectives) which appear on the lists below or may be considered as synonyms for the words on these lists.

HIGH:	extremely	unquestionably
	very, too	undeniably
	unusually	definitely
	decidedly	certainly
	adamantly	doubtlessly
	totally	obviously
	completely	proven
	entirely	surely

Coding Instructions (3)

HIGH
(cont'd.)

positively
absolutely
necessarily
directly

repeatedly
always
forever
never/ever
continually
externally
perpetually

instantly
immediately

all
none
every
no one
nothing
same/identical(ly)
any
only
each
no

MODERATE:

so
quite
pretty
rather
much
many
a number of
almost

high
small
large
few
little
main

now
presently
soon

similar
most
such
enough
just
on the whole
adequately

apparently
greatly

recently
usually
often
rarely
seldom
further

also, too
not only
already

LOW INTENSITY:

slightly
somewhat
partially
some
a few
several
fairly
one of... part of..
among the...
generally

eventually
subsequently
ultimately

possibly
doubtfully
supposedly
perhaps
probably
maybe
conceivably
seemingly
even

occasionally
sometimes
infrequently
indirectly

Coding Instructions (4)

AMBIVALENCE CONSTRUCTIONS: Code all conjunctions of the following types as ambivalence constructions:

(also include any synonyms for these words)

but

however

although

even though

while (when used as a conjunction)

still (when a conjunction)

yet (when a conjunction)

ERRORS

PUNCTUATION: Count all omissions or incorrect usages of periods, question marks (when obviously needed) as well as commas, colons, quotation marks, failure to capitalize properly. Only code those errors which you find readily apparent.

SPELLING: Count all spelling errors. When in doubt, consult the dictionary to determine spelling accuracy.

EDITING: Count each cross-out of a single word or part of a word; count each erasure of a word or a part of a word; count each retracing of a word or letter(s) within a word; count each insertion of a word or part of a word as an instance of Editing.

CODING FORM Counter-attitudinal Encoding Study

Coder _____

Subject Number _____

Time of Exper.: Tues.(T₁) Wed. (T₂)

1. Total words _____
2. Time Spent _____
3. Total Sentences _____
4. Total Syllables (1st hundred words) _____
5. Total Verbs (Active) _____
6. Total Verbs (passive) _____
7. Total Verbs (Present Tense) _____
8. Total Verbs (Past Tense) _____
9. Total Verbs (Future Tense) _____
10. Errors a) total punctuation errors _____
 b) total spelling errors _____
 c) total x-outs & insertions _____
11. Total HIGH intensity modifiers _____
12. Total MODERATE intensity modifiers _____
13. Total LOW intensity modifiers _____
14. Total HIGH intensity Verbs _____
15. Total MODERATE intensity Verbs _____
16. Total LOW intensity Verbs _____
17. Total Ambivalence constructions _____

MESSAGE ANALYSIS Counter-attitudinal Encoding

Subject Number _____

Time of Exper. Tues. (T_1) Wed. (T_2)

1. wds./minute _____
2. wds./sentence _____
3. syllables/first 100 words. _____
4. active verbs/active + passive verbs _____
5. present tense vbs./pres + past + fut vbs. _____
6. past tense vbs./pres + past + future vbs. _____
7. future tense vbs./pres + past + fut. vbs. _____
8. HIGH intensity Modifiers/ total wds. _____
9. MODERATE intensity Modifiers/ total wds. _____
10. LOW intensity Modifiers/ total wds. _____
11. HIGH intensity Verbs/ total wds. _____
12. MODERATE intensity Verbs/ total wds. _____
13. LOW intensity Verbs/ total wds. _____
14. Punctuation errors/total wds. _____
15. Spelling errors/total wds. _____
16. x-outs & insertions/total wds. _____
17. Total Errors & Changes/total wds. _____
18. Total Ambivalence Constructions/total wds. _____

APPENDIX 4
CODING RELIABILITIES

Inter-Coder Reliabilities

Variable	Reliability Check #1 (sample n=10)	Reliability Recheck # 2 (sample n=5)
Total Words	.9993	--
Total Sentences	.9991	--
Total Syllables (first 100 words)	.8517	--
Total Active Verbs	.9903	.9846
Total Passive Verbs	.8910	.6054
Total Present Tense Verbs	.9882	.9949
Total Past Tense Verbs	.9761	.7647
Total Future Tense Verbs	1.0000	.9660
Total Punctuation Errors	.5643	.8840
Total Spelling Errors	.8872	.9220
Total Editing	.9887	.8770
Total High Intensity Modifiers	.9761	.9694
Total Moderate Intensity Modifiers	.8147	.9748
Total Low Intensity Modifiers	.9254	.9146
Total High Intensity Verbs	.8960	.9422
Total Moderate Intensity Verbs	.8689	.9001
Total Low Intensity Verbs	.8769	.9588
Total Ambivalence Constructions	.9254	.8164

APPENDIX 5

Standard Deviations

<u>Variable</u>	<u>Topic Condition</u>	<u>Counter- Attitudinal</u>	<u>Attitude- Consistent</u>
Production Rate	18 vote	4.398	3.594
	TV censors	4.144	4.768
Time Spent	18 vote	5.487	5.346
	TV censors	6.074	6.431
Punctuation Errors	18 vote	.017	.010
	TV censors	.019	.017
Spelling Errors	18 vote	.009	.009
	TV censors	.012	.018
Editing	18 vote	.038	.052
	TV censors	.204	.063
Total Errors	18 vote	.044	.053
	TV censors	.210	.078
Error Rate	18 vote	.521	.434
	TV censors	.604	.456
Words per Sentence	18 vote	4.863	5.334
	TV censors	3.014	3.911
Syllables per 100 wds	18 vote	9.658	12.300
	TV censors	15.281	13.230
High Intense Modifs (per total wds)	18 vote	.013	.014
	TV censors	.013	.016
Moderate Intense Modifs (per total wds)	18 vote	.016	.020
	TV censors	.019	.013
Low Intense Modifs (per total wds)	18 vote	.009	.006
	TV censors	.011	.009
High Intense Modifs (per total modifs)	18 vote	.150	.182
	TV censors	.161	.239
Low Intense Modifs (per total modifs)	18 vote	.102	.099
	TV censors	.128	.089
High Intense Verbs (per total wds)	18 vote	.019	.018
	TV censors	.015	.012

Standard Deviations (con't)

<u>Variable</u>	<u>Topic Condition</u>	<u>Counter- Attitudinal</u>	<u>Attitude- Consistent</u>
Moderate Intense Verbs (Per total wds)	18 vote TV censors	.010 .021	.019 .014
Low Intense Verbs (per total wds)	18 vote TV censors	.009 .011	.007 .009
High Intense Verbs (per total verbs)	18 vote TV censors	.116 .161	.150 .124
Low Intense Verbs (per total verbs)	18 vote TV censors	.093 .114	.058 .079
Active Voice Verbs	18 vote TV censors	.079 .073	.066 .048
Present Tense Verbs	18 vote TV censors	.091 .099	.130 .072
Past Tense Verbs	18 vote TV censors	.097 .071	.133 .058
Future Tense Verbs	18 vote TV censors	.040 .086	.027 .054
Ambivalence Consts.	18 vote TV censors	.005 .005	.004 .003

APPENDIX 6

F Test Results

<u>Dependent Variable</u>	<u>Source of Variance</u>	<u>Obtained F</u>	
Production Rate	A (order effect)	.1437	
	B (topic effect)	.1952	
	C (encoding conditions)	.8234	
	AB (order x topic)	2.0362	
	AC (order x enc.)	.0019	
	BC (topic x enc.)	.0107	
	ABC (order x topic x encoding)	1.5464	
Time Spent	A	.5367	
	B	.1368	
	C	.5386	
	AB	1.2479	
	AC	1.6964	
	BC	.1174	
	ABC	6.8133	***
Punctuation Errors	A	.0042	
	B	1.8113	
	C	.7285	
	AB	.0188	
	AC	.1188	
	BC	.0593	
	ABC	.3355	
Spelling Errors	A	.1312	
	B	4.1814	**
	C	.7785	
	AB	.0155	
	AC	.0906	
	BC	.1748	
	ABC	2.6874	

* p < .10
 ** p < .05
 *** p < .025
 **** p < .01

F Test Results (con't)

<u>Dependent Variable</u>	<u>Source of Variance</u>	<u>Obtained F</u>
Editing	A	2.8801
	B	.9361
	C	.7229
	AB	.6107
	AC	1.4639
	BC	1.0827
	ABC	1.7682
Total Errors	A	2.5241
	B	1.6857
	C	1.2781
	AB	.4949
	AC	1.6892
	BC	1.0127
	ABC	1.2900
Error Rate	A	3.8974 *
	B	1.7957
	C	2.6001
	AB	.4963
	AC	2.0099
	BC	.2028
	ABC	.0432
Words Per Sentence	A	.7513
	B	4.5482 **
	C	.1316
	AB	.1133
	AC	.0318
	BC	.3065
	ABC	1.0584
Syllables Per Hundred Words	A	2.1913
	B	5.9540 **
	C	.5290
	AB	.6155
	AC	.5972
	BC	.0008
	ABC	3.3730

F Test Results (con't)

<u>Dependent Variable</u>	<u>Source of Variance</u>	<u>Obtained F</u>
High Intensity Modifiers (per total words)	A	.0077
	B	2.1011
	C	.2865
	AB	.0077
	AC	2.6477
	BC	.5360
	ABC	1.9660
Moderate Intensity Modifiers (per total words)	A	.0214
	B	3.7325 *
	C	.4526
	AB	.0249
	AC	3.3769 *
	BC	2.1873
	ABC	1.8861
Low Intensity Modifiers (per total words)	A	.0270
	B	.2634
	C	.0018
	AB	.1695
	AC	.0021
	BC	.6441
	ABC	.1217
High Intensity Modifier Ratio (per total modifiers)	A	.0939
	B	3.6973 *
	C	.8788
	AB	.0026
	AC	.2489
	BC	.3609
	ABC	3.5269 *
Low Intensity Modifier Ratio (per total modifiers)	A	.2366
	B	.2573
	C	.2387
	AB	.0036
	AC	.3906
	BC	.3993
	ABC	.0702

F Test Results (con't)

<u>Dependent Variable</u>	<u>Source of Variance</u>	<u>Obtained F</u>	
High Intensity Verbs (per total words)	A	.0130	
	B	.1534	
	C	.8206	
	AB	.5704	
	AC	.0168	
	BC	.3932	
	ABC	4.1317	*
Moderate Intensity Verbs (per total words)	A	.1221	
	B	.0048	
	C	1.0058	
	AB	.0052	
	AC	.6907	
	BC	1.7236	
	ABC	2.2977	
Low Intensity Verbs (per total words)	A	.4807	
	B	8.7913	****
	C	.4303	
	AB	1.5860	
	AC	.0887	
	BC	.2918	
	ABC	.0781	
High Intensity Verb Ratio (per total verbs)	A	.2760	
	B	1.6234	
	C	3.3796	*
	AB	1.1636	
	AC	.3945	
	BC	.3968	
	ABC	3.0535	*
Low Intensity Verb Ratio	A	.4660	
	B	7.9834	****
	C	.8120	
	AB	1.5996	
	AC	.0843	
	BC	.2440	
	ABC	.1264	

F Test Results (con't)

<u>Dependent Variable</u>	<u>Source of Variance</u>	<u>Obtained F</u>
Active Voice Verbs	A	.1654
	B	.0449
	C	3.1459 *
	AB	1.4345
	AC	2.1276
	BC	.4579
	ABC	.1869
Present Tense Verbs	A	.5136
	B	4.7916 **
	C	.0261
	AB	.0249
	AC	.2015
	BC	2.4957
	ABC	.2849
Past Tense Verbs	A	.0142
	B	8.8698 ****
	C	.4757
	AB	.0998
	AC	.5664
	BC	1.5273
	ABC	.2260
Future Tense Verbs	A	.4304
	B	4.2123 **
	C	.4215
	AB	.2903
	AC	.0684
	BC	.8013
	ABC	.1086
Ambivalence Constructions	A	2.6710
	B	6.4204 ***
	C	.0369
	AB	.7160
	AC	3.0767 *
	BC	.3647
	ABC	1.8018

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