The Relationship Between Resistance to Persuasion and Generalized Self-Esteem

1974

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THE RELATIONSHIP BETWEEN RESISTANCE TO PERSUASION AND GENERALIZED SELF-ESTEEM

BY

STEVEN L. MCKEE
B.S., Florida Southern College, 1969

THESIS

Submitted in partial fulfillment of the requirements for the degree of Master of Arts in the Graduate Studies Program of Florida Technological University

Orlando, Florida
1974
TO SANDY AND SCOTT
ACKNOWLEDGMENTS

A number of individuals have made notable contributions to this study. First, I wish to express my sincere gratitude to the members of the committee. My interest in the study of resistance to persuasion in relation to self-esteem was kindled in a class taught by Dr. Albert Pryor. From the inception of this experiment to its completion, Dr. Pryor, as Committee Chairman, has been a source of continual guidance, insight, and encouragement. As a friend, he is invaluable. The other committee members, Dr. Raymond Buchanan, the Mentor, and Dr. Robert Arnold, the Godfather, have also provided timely suggestions and willing help.

The hours that Sandy, my wife, has spent typing and proofreading the various draft copies of all the sections of the current study are far too many to count. I deeply appreciate her understanding and devotion. Her undaunting inspiration and love overwhelm me.

Finally, I wish to acknowledge Scott, my son, who has displayed wisdom far exceeding a three-year old, for understanding why "Daddy" couldn't go out and play. He is my light.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Review of Research</td>
<td>1</td>
</tr>
<tr>
<td>Research Questions</td>
<td>13</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>15</td>
</tr>
<tr>
<td>Subjects</td>
<td>15</td>
</tr>
<tr>
<td>Design</td>
<td>15</td>
</tr>
<tr>
<td>Materials</td>
<td>18</td>
</tr>
<tr>
<td>Issues</td>
<td>18</td>
</tr>
<tr>
<td>Messages</td>
<td>18</td>
</tr>
<tr>
<td>Measurement Scales</td>
<td>19</td>
</tr>
<tr>
<td>Resistance to Persuasion Measurement</td>
<td>20</td>
</tr>
<tr>
<td>Administration</td>
<td>21</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>22</td>
</tr>
<tr>
<td>RESULTS</td>
<td>23</td>
</tr>
<tr>
<td>Test on Effects of Attacks</td>
<td>25</td>
</tr>
<tr>
<td>Test on Main and Interaction Effects</td>
<td>26</td>
</tr>
<tr>
<td>Research Questions</td>
<td>26</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>29</td>
</tr>
<tr>
<td>Research Questions</td>
<td>29</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>39</td>
</tr>
<tr>
<td>APPENDIX A. Self-Esteem Questionnaire</td>
<td>42</td>
</tr>
<tr>
<td>APPENDIX B. Filler Attitude Questionnaire</td>
<td>44</td>
</tr>
<tr>
<td>APPENDIX C. Relevant Attitude Questionnaire</td>
<td>46</td>
</tr>
<tr>
<td>APPENDIX D. Experimental Messages</td>
<td>48</td>
</tr>
<tr>
<td>APPENDIX E. Instructions to the Subjects</td>
<td>60</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>61</td>
</tr>
<tr>
<td>TABLE</td>
<td>Proposed/Actual Distribution and Division of Experimental Cells and Subjects</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Proposed/Actual Distribution and Division of Control Cells and Subjects</td>
</tr>
<tr>
<td>2</td>
<td>Mean Belief Levels Produced by All Treatments</td>
</tr>
<tr>
<td>3</td>
<td>Mean Self-Esteem Level for Each Condition</td>
</tr>
<tr>
<td>4</td>
<td>Analysis of Variance of Attack-Only and Neither/Nor Data on Initial Beliefs</td>
</tr>
<tr>
<td>5</td>
<td>Main and Interaction Effects for All Treatments Involving a Defense and an Attack</td>
</tr>
</tbody>
</table>
Introduction

One goal of communication research has been to isolate variables which can account for individual differences in the acceptance or rejection of persuasive communications. The self-esteem or favorableness of self-rating of the recipient is one such variable.

The purpose of this investigation is to determine the relationship between resistance to persuasion and generalized self-esteem. Resistance is studied as a function of pretreatments which, when administered to a receiver, render him less susceptible to persuasive messages than he is found to be without these pretreatments. A cursory review of contemporary literature in this area might lead one to believe that the relationship has already been formulated. Cox and Bauer (1964) tell us, "A well established finding in the literature on personality and persuasibility is that males low in self-esteem, or generalized self-confidence, are on the whole more readily persuaded than males high in self-confidence." Or to put it in another way; males with high self-esteem are more resistant to persuasive attempts than males with low self-esteem.

It should be made clear that while the current investigation involves "resistance" to persuasion, the vast majority
of related work in this area refers to "persuasibility." Unlike the resistance research paradigm, persuasibility research usually does not involve messages which are designed to protect beliefs.

Janis (1954, 1955), Janis and Field (1959), and Janis and Rife (1959) hypothesized that self-esteem would correlate negatively with persuasibility in young adults. Their rationale was that compliance is a defensive attempt to avoid displeasing anyone. The composite results of the four studies offer somewhat weak and dubious support for their hypothesis. This is so because (1) the trends are small and usually insignificant; (2) the studies are practically impossible to compare directly, due to variations in methods and types of subjects; and (3) in any design correlating a contemporary characteristic of a subject with a "consequent" behavior, there is much danger of artifactual contamination between the two measures being correlated (Wylie, 1961).

For example, in two of the four studies (Janis, 1954; Janis and Field, 1959), self-esteem was measured by a specially assembled collection of personality questionnaire items which the experimenter subdivided by inspection into three clusters. It appears that the two studies did not employ the same criterion to establish levels of self-esteem. Self-esteem was inferred by Janis (1954) from 38 items selected from "standard inventories" classed on the
basis of manifest content into (a) social inadequacy, (b) inhibition of aggression, (c) depression, (d) neurotic anxiety, (3) obsessional symptoms. Janis (1954) used the first three clusters to measure self-esteem. Janis and Field (1959) published three apparently different clusters: (a) social inadequacy, (b) social inhibition, (c) test anxiety. Still, Wylie (1961) reported that the estimated coefficient of reliability, using the Spearman-Brown formula, for these clusters ranged from +.65 to +.91. In a third study (Janis and Rife, 1959), only one of the Janis and Field clusters was used (social inadequacy) as the self-esteem measure. In the fourth study (Janis, 1955) a socially oriented "anxiety" cluster from Sarason's Test Anxiety Questionnaire was the self-esteem index.

Also, three different measures of persuasibility were used in the four studies. Janis and Rife (1959) used a persuasibility test developed in part by Janis and Field. Janis and Field (1959) used what they termed a "new" persuasibility test developed by themselves. And, Janis (1954) measured persuasibility using three questions originally developed by Hovland and Weiss (1951).

The Janis (1954) study supports the hypothesis that high self-esteem subjects were significantly less persuasible than low self-esteem subjects for two out of three clusters of the self-esteem index. Persuasibility was found to be positively correlated with the "neurotic anxiety" and "obsessional symptoms" self-esteem clusters.
Subsequent evidence (Janis, 1955) failed to confirm the inverse relation between persuasibility and self-esteem. In the Janis and Field (1959) study, only two out of six measures of validity reached acceptable levels of significance. Their results showed significant correlations between persuasibility and the self-esteem clusters of "social inadequacy" and "social inhibitions." The only highly significant correlation was obtained by Janis and Rife (1959) between one of the Janis and Field self-esteem clusters (social inadequacy) and a persuasibility test given to hospitalized, emotionally disturbed males. However, a substantial difference was found between means of normal and abnormal groups. The difference approached significance beyond the 10 per cent confidence level ($t = 1.81; p < .08$, two-tail). It would appear unrealistic to generalize to other populations from this sample.

Even if all the correlations had come from comparable procedures and had been highly significant, a problem of interpretation would remain. This problem lies in the possible confounding between persuasibility and initial opinion. That is, if groups classed as high, medium, and low on persuasibility also differed systematically on their initial opinions, one could not tell whether self-esteem was associated with initial opinions, persuasibility, or both. Apparently the correlation of initial opinion with opinion change was not explored in any of these
studies. Related to this question, however, Janis reported in his 1954 article that he examined the precommunication opinions of the personality groups. He says (1954) "No significant or consistent differences were found which could account for the observed differences in opinion change (p. 514)." A similar control observation was not reported in the other three studies. In criticizing his other study (Janis and Field, 1959) the author reports that "it is measuring something quite different from what is measured by the self-ratings, but there is only one significant correlation, which is not a very large one, while the others are too small to approach statistical significance. Perhaps the main reason for the low correlations is that the self-rating scores have low reliability (p. 257)."

Abelson and Lesser (1959) proposed that self-esteem in children is negatively associated with persuasibility. Self-esteem was measured in three ways: (1) Children were asked to compare themselves with the other children in the class on certain favorable but ambiguous characteristics; (2) Each subject was asked which children in his class liked him and would choose to sit next to him; (3) Finally, the discrepancy between the rank of the second measure and the child's actual sociometric rank was obtained. It is not clear why the third index should be called a "self-esteem" measure, since it involves more than the subject's
In a later study, the authors deleted this "third" measure of self-esteem.

In contrast to the studies mentioned above, persuasibility was not measured in terms of before and after change scores. The specially devised Persuasibility Booklet contained pairs of pictures of unfamiliar objects. It was assumed that the subjects' attitude toward either picture in a pair would be neutral unless influenced by someone else's expressed opinion. By avoiding before and after measures, the authors hoped to avoid the "initial opinion artifact" (Wylie, 1961).

The teacher or experimenter indicated which picture she liked better in each pair and then she asked the subjects to indicate their choice. Persuasibility was measured in terms of the number of agreements between child and communicator.

Eleven groups of first-grade subjects were used, and since there were three self-esteem indices, 33 measures of validity were obtained between self-esteem and persuasibility scores. Twenty-two of these measures of validity were in the predicted direction, but none were significant. When groups were separated by sex, only the third measure of self-esteem provided significant support for the hypothesis. Again, this is the measure which was deleted in subsequent studies, apparently due to a lack of face validity.
In a second study by these authors, children were designated as high or low in self-esteem on the basis of a combination of the first and second self-esteem measures. The experimenter first elicited an individual child's preferences on pairs of pictures, then agreed or disagreed with the child's selection. Next, she attempted to influence the children on fourteen pictures by presenting her own opinion before the child expressed his. Children with low self-esteem were significantly more persuadible on the final fourteen pictures than were children with high self-esteem. Significant results were obtained in each of two replications. This was a significant interaction effect, since it was only after experimenter agreement in the initial part of the procedure that the subjects with low self-esteem scores exhibited greater persuasibility on the final fourteen pictures. The authors speculate that the low self-esteem child reacts sensitively to the approval he seeks from others and is predisposed to be persuadible only if the communicator indicates to him the likely possibility that they will agree with each other.

Only in the second study did these investigators obtain support for the prediction that self-esteem is negatively related to persuasibility in first-grade children. Why null results were obtained from the first two measures in their first design is difficult to ascertain. It may be that the relation between self-esteem and
persuasibility is not obtained unless the experimenter has indicated that the reward of agreement with him is a possibility.

Cohen (1959) concluded that within interacting pairs of persons, subjects who are high in self-esteem will exert more influence on a common judgment and/or will perceive themselves as attempting to influence the partner more often than will subjects low in self-esteem. However, it must be noted that Cohen's conclusion is more speculative than empirically supported. In fact, the experiment was originally designed for another purpose, that of measuring attitude change of subjects in relation to similar and dissimilar source characteristics. Self-esteem was employed only as a control variable for the similarity manipulation.

Janis, Field, Rife, Abelson, and Lesser all assumed that subjects with low self-esteem are persuasible because they have an especially strong need to avoid displeasing others.

Linton and Graham's (1959) study is more complicated than any of the above investigations because they utilized more measures of personality, including some which purported to index both the conscious and unconscious self images of the subjects. Persuasibility was measured on two questions in an opinion-change test. On the basis of this test, subjects were subdivided into three unequal size groups: those who changed toward the opinions
expressed in the persuasive communication (positive changers), those who changed away from the persuasive communication (negative changers), and nonchangers. There was no control group to establish what changes would occur without systematic intervening influence, nor to provide a basis for establishing the cutting points between what might be called nonsignificant change (i.e., nonchange) and significant change (i.e., change in either a positive or negative direction). The negative change group was cut much nearer the 0% change point than was the positive change group. This decision was apparently made partly on the basis of a preliminary analysis of the relation between independent and dependent variables (Wylie, 1961). We cannot know whether the change groups were matched as to their original answers, but this seems unlikely. If they were not matched on original answers, this leaves the possibility that the personality variables might be associated with the position of the subjects' original answers to the opinion items, rather than being associated with the subjects' changeability of opinion. Thus, there would be a distinct possibility of internal invalidity due to statistical regression.

On the personality measurement side of the study, the authors assumed the validity of certain Machover figure drawing scales for revealing the subjects' unconscious self image. This assumption has been challenged on the basis of extensive literature reviews by Levy (1950) and by Swensen (1957). Twelve out of the 38 figure drawing
comparisons significantly differentiated positive changers from the other two groups. But in the light of the unproven validity of the test, as well as the questions already raised about the formation of the groups, one wonders how to interpret these statistical findings.

In summary, before it is concluded that a generalized relationship between "self-esteem" and "persuasibility" has been demonstrated, we must remember the following facts about the related studies. (1) Conclusions and significant results are inconsistent. (2) Every study used a different combination of self-esteem and persuasibility measures. Intercorrelation among self-esteem measures between studies has not been sufficiently demonstrated. No intercorrelations among persuasibility or conformity measures are available. We should avoid generalizations based on assigning the same label to several possibly unrelated instruments. In short, one cannot combine the findings from the several studies into a pattern which has a clear meaning. (3) Many insignificant trends were obtained, including insignificant reversals from predicted associations. (4) The possibility of artifact has not been ruled out in all studies. In particular the "initial opinion" has not been adequately controlled for in the opinion change studies (Wylie, 1961).

Since previous findings are inconsistent, it is not possible to derive a formal hypothesis for the current study. While this study deals with persuasibility and self-esteem, it deals so in a more specific way than that
of previous research in that resistance to persuasion, rather than persuasibility, is the dependent measure. Confering resistance to persuasion as considered here involves giving a person some specific training (communication) that would enhance his ability to adhere to his belief when subsequently confronted with influence (persuasive) attempts (McGuire, 1964).

McGuire's series of experiments on inducing resistance to persuasion stems from a biological analogy, whence the term "inoculation theory." In the biological situation, the person is typically made resistant to some attacking virus by pre-exposure to a weakened dose of the virus. This mild dose stimulates his defenses so that he will be better able to overcome any massive viral attack to which he is later exposed, but is not so strong that this pre-exposure will itself cause the disease. Alternatively, biological resistance can be augmented by supportive therapy such as adequate rest, good diet, and vitamin supplements. Inoculation is likely to be superior to supportive therapy to the extent that the person has previously been brought up in a germ-free environment. It is a seeming paradox that individuals raised aseptically tend to appear vigorously healthy (even without supportive therapy) but are highly vulnerable when suddenly exposed to massive doses of the disease virus (McGuire, 1964, p. 200).

McGuire theorized that to directly apply his biological analogy, he should "deal as far as possible with beliefs that had been maintained in a 'germ-free' ideological environment, that is, beliefs that the person has seldom, if ever, heard attacked (1964, p. 200)." He therefore used only "cultural truisms," strongly held beliefs about health practices, as issues in his experiments.

McGuire's inoculation theory assumes that pretreatments designed to make beliefs resistant to subsequent persuasive
attacks will be effective to the extent that they overcome two basic difficulties: one, the believer is unpracticed in defending his belief; and two, he is unmotivated to undertake the necessary practice because he considers the belief unassailable. McGuire hypothesized that motivation to defend belief in a truism could be effected by causing a listener to perceive his belief as vulnerable, and that such a perception could be accomplished through pre-exposure to weakened forms of subsequent counterarguments. Further, motivation alone was not expected to supply resistance since an individual may not have available any defensive material with which to refute an attack. Thus, some amount of guidance is needed to aid in the development of such belief-bolstering material (McGuire, 1964). McGuire's (1964) study showed that defenses which present arguments supporting the belief are less effective in conferring resistance to subsequent strong attack than are refutational-same defenses. The latter ignore arguments positively supporting the belief but do mention and refute the same arguments against the belief as are to be used in the subsequent attack. He also found that a refutational defense is almost as effective when it refutes arguments against the belief which are different from those to be used in the later attack as when it refutes the very same arguments used in the attack.

Only three studies that involve resistance to persuasion as a function of self-esteem are available. All three of
these (Kelman, 1950; Mausner, 1954; Samelson, 1957) attempt to experimentally manipulate self-esteem, rather than investigate generalized self-esteem's relationship to resistance to persuasion. These researchers demonstrated that a prior success experience enhances the believer's resistance to subsequent persuasive attempts. Resistance was increased, even when the task on which the individual succeeded was quite different from the task employed in the influence attempt. The current study does not attempt to manipulate self-esteem. The purpose of this study is to determine the relationship between resistance to persuasion and generalized self-esteem.

Cox and Bauer's (1964) statement, "a well established finding," concerning this relationship receives only sporadic support. Since previous research is inconsistent, the following research questions will be examined in order to evaluate this phenomena:

1. What is the relationship between resistance to persuasion and general self-esteem?

2. What type of defense is best suited for low self-esteem individuals to accomplish resistance to persuasion for moderately held beliefs?

3. What type of defense is best suited for high self-esteem individuals for moderately held beliefs?

4. Of supportive, refutation-same, and refutation-different, which defense is the best suited for all subjects combined for moderately held beliefs?

In order to examine these questions, an experimental group (3 x 2 design) and a control group (2 x 2) was employed
The experimental group was divided into high self-esteem and low self-esteem with subjects randomly receiving one of the three defenses: refutational-same, refutational-different or supportive. The control group, also divided into high and low self-esteem, received an attack-only or a neither defense, nor attack message.
Methodology

Subjects

Approximately 200 male Army reserve members, including officers and enlisted men, were used as subjects. These men were serving a two week training period at Fort Stewart, Georgia. Subjects were seen in three separate groups, varying in size from fifty to eighty subjects per group. These subjects were made available as students for a weekly training session.

Subjects' ages ranged from 18 to 47. It is also interesting to note that occupations ranged from Chemists and High School Principals to common labor. The reserve rank of subjects ranged from Private to Colonel. A cross section of race, education, and geographical habitat was noted for all groups.

Independent control groups were used to obtain initial mean belief levels and to examine the effects of the belief-attacking messages without the belief-defending messages on initial belief levels. Individual subjects were exposed to only one type of defense: supportive, refutational-same, or refutational-different.

Design

There were a total of ten conditions; six (3 x 2) of which represented the experimental conditions (see Table 1),
and four (2 x 2) of which represented the control conditions (see Table 2).

**TABLE 1**

<table>
<thead>
<tr>
<th>Type of Defense</th>
<th>Subjects with High Self-Esteem</th>
<th>Subjects with Low Self-Esteem</th>
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<tbody>
<tr>
<td>Supportive</td>
<td>20/21 Subjects</td>
<td>20/19 Subjects</td>
</tr>
<tr>
<td>Refutational-Same</td>
<td>20/18 Subjects</td>
<td>20/22 Subjects</td>
</tr>
<tr>
<td>Refutational-Different</td>
<td>20/18 Subjects</td>
<td>20/22 Subjects</td>
</tr>
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</table>

**TABLE 2**

<table>
<thead>
<tr>
<th>Control Condition</th>
<th>Subjects with High Self-Esteem</th>
<th>Subjects with Low Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither/Nor</td>
<td>20/24 Subjects</td>
<td>20/16 Subjects</td>
</tr>
<tr>
<td>Attack Only</td>
<td>20/19 Subjects</td>
<td>20/21 Subjects</td>
</tr>
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</table>

Due to randomization of treatments, the actual distribution did not replicate the proposed number of subjects per cell. This difference is also due to division of all subjects by using a median split for all self-esteem scores.
The design provided final opinion scores for each of the five message treatments: supportive, refutational-same, refutational-different, attack only, and the neither defense/nor attack condition. The experiment covered two sessions, the first devoted to the defenses; the second, to strong attacks and to measuring the resultant belief levels. The present study was presented to subjects as a verbal skills test.

Two basic types of defenses were used which differ in the amount of threat: "supportive" and "refutational." The supportive defense was non-threatening; it consisted of giving the subject various arguments in support of the moderately held belief. The refutational defense was more threatening; instead of positively supporting the belief, it mentioned several arguments attacking the belief, and then proceeded to refute those attacks.

The refutational defenses, considered in relation to the subsequent attacks, were one of two types. They either mentioned and refuted the very arguments against the belief that were used in the subsequent attack, or they mentioned and refuted arguments different from the ones used in the attacks. McGuire (1964) tells us that "this refutational-same vs. refutational-different defense variation is useful in determining whether any increased resistance to persuasion derives from the generalized motivational effect of the threatening mention of the
arguments against the belief, or whether it stems from the useful defensive material provided directly by the refutations (p. 202)."

**Materials**

**Issues.** Two issues (relevant-non-relevant) were selected on the basis of a previous study (Pryor, 1972). The topics selected were the following: "Vehicular Defects: A Frequent Cause of Traffic Accidents" and "The Benefits of Brushing Teeth after Every Meal," the latter being used as non-relevant filler material.

**Messages.** The experimental messages for all defensive and attacking treatments replicated the McGuire format. Two types of messages were used, including those designed to defend and those designed to attack an existing belief. The former, which McGuire (1964) calls immunizing messages, consists of three paragraphs. The first paragraph mentions two "misleading" counterarguments against the belief, while the second and third contain the refutations of these two counterarguments. To create refutational-same and refutational-different defenses, two immunizing messages were prepared on each belief. That is, the attacking messages used either the same or different arguments than those previously refuted in the defensive treatment. As in McGuire's work, the supportive defenses consisted of a statement about an issue, followed first by a paragraph.
containing two supportive arguments, then by two paragraphs, each developing one of the arguments.

The attacking messages were designed to reduce belief levels through strong arguments against a belief. Similar in structure to the immunizing messages, each contained three paragraphs, the first of which briefly described two attacks against the belief, while the following two paragraphs strongly elaborated those counterarguments with specific evidence for their validity. All the messages, both immunizing and strong counterarguing, were between 500 and 550 words in length (see Appendix D).

Measurement Scales. A person's self-esteem affects the evaluation he places on his performance in a particular situation and the manner in which he behaves when in interaction with others. Self-esteem concerns the amount of value an individual attributes to various facets of his person and may be said to be affected by the success and failures he has experienced in satisfying central needs. It may be viewed as a function of the coincidence between an individual's aspirations and his achievement of these aspirations. Therefore, the instrument for measuring self-esteem was designed in accordance with this definition. Self-esteem was operationally defined by Rosenberg's modification of the Tennessee Self Concept Scale, which measures three aspects of the self concept: identity, acceptance, and behavior. Since it is more specific to
current purposes, only one of the above clusters, self-acceptance, was used. As Rosenberg (1965) explains, one connotation of high self-esteem is that a subject thinks that he is "good enough." This concept is reflected in Rosenberg's modified scale for use in this study (see Appendix A). Subjects were divided into high and low self-esteem groups by using a median split.

**Resistance to Persuasion Measurement.** Initial opinions on moderately held beliefs (Pryor, 1972) were defined using McGuire's (1964) fifteen point scale. Persuasion was said to have occurred when an attacking message produced a significant decrease in mean belief level on the 15-point scale. Operationally, resistance to persuasion occurred when a defense-attack experimental treatment produced a mean belief level significantly higher than its corresponding attack-only treatment. Each questionnaire contained seven questions of which four were relevant and three were non-relevant (see Appendix B). A subject's score on a given topic was the mean of his responses to the four relevant items. For example:

Only a small number of traffic accidents in the U. S. are attributable to vehicle failures.

|  / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 /  |
|---|---|---|---|---|---|---|---|---|---|
| Definitely | Probably | Uncertain | False | False |
| / 10 / 11 / 12 / 13 / 14 / 15 / |
| Probably | Definitely | True | True |
Administration. To minimize suspicion concerning the self-concept and attitude measures the sessions were listed on a weekly training schedule as "S-2" (intelligence) and counter-intelligence operations.

In each experimental session, the instructions on the cover page of each test booklet were read aloud. Subjects were told that the "essays have been prepared by a research team at the Institute for Social Research and are designed to test reading skills." Subjects in all sessions were instructed to read each paragraph, then go back and underline its crucial clause. Five minutes were allotted to the completion of each essay, three minutes for the 12-item attitude questionnaire. The same instructions were repeated at the beginning of the follow-up sessions in delayed measure treatments.

Subjects were told that all answers they gave would be held in strict confidence, and that there would be no way for their answers to be traced back to them.

Each subject received one of five different booklets on random basis. The different types of booklets are diagramed as follows:

Type I: (Neither/Nor) / Cover / Self-Esteem Questionnaire / Filler Questionnaire / Filler Material / Filler Material / Relevant Questionnaire.

Type II: (Attack Only) Cover / Self-Esteem Questionnaire / Filler Questionnaire / Filler Material / Relevant Attack / Relevant Questionnaire.
Type III: (Refutational-Same) Cover / Self-Esteem Questionnaire / Filler Questionnaire / Refutational-Same Defense / Relevant Attack / Relevant Questionnaire.

Type IV: (Refutational-Different) Cover / Self-Esteem Questionnaire / Filler Questionnaire / Refutational-Different Defense / Relevant Attack / Relevant Questionnaire.

Type V: (Supportive) Cover / Self-Esteem Questionnaire / Filler Questionnaire / Supportive Defense / Relevant Attack / Relevant Questionnaire.

After the subjects had finished all sections and the booklets were collected, a general debriefing and question-answer period was held. The subjects were again assured that all answers they gave would be held in confidence.

Data Analysis

Subjects were divided into high and low self-esteem groups by using a median split of their mean scores on the self-esteem test. Scores on the self-esteem test were computed by adding the twenty separate indicators and dividing by twenty to achieve an average score for each subject.

Final belief levels were computed by obtaining the mean of an individual's responses on the 15 point scales. A 3 x 2 factorial analysis of variance was used to measure the main and interaction effects of types of defenses and levels of self-esteem (see Table 1). A 2 x 2 factorial analysis was used for the control measurements (see Table 2).

In all cases, follow-up t tests were used to isolate simple effects when warranted by analysis of variance results.
Results

The mean belief levels produced by each treatment in relation to self-esteem scores form the data of this study. Belief levels were defined as a subject's score along the 15-point continuum. Persuasion may be said to have occurred when an attacking message produced a significant decrease in mean belief level on the 15-point scale. Operationally, resistance to persuasion occurred when a defense-attack experimental treatment produced a mean belief level significantly higher than its corresponding attack-only treatment. A subject's score was computed as the mean of his responses to the four relevant items. The questionnaire may be examined in Appendix B. Mean belief levels for each treatment are summarized in Table 3.

<table>
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<tr>
<th>Type of Defense</th>
<th>Subjects with High Self-Esteem</th>
<th>Subjects with Low Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither/Nor</td>
<td>8.20 (24)*</td>
<td>6.92 (16)</td>
</tr>
<tr>
<td>Attack-Only</td>
<td>3.36 (19)</td>
<td>3.90 (21)</td>
</tr>
<tr>
<td>Supportive</td>
<td>7.92 (21)</td>
<td>6.88 (19)</td>
</tr>
<tr>
<td>Refutational-Same</td>
<td>7.17 (18)</td>
<td>8.57 (22)</td>
</tr>
<tr>
<td>Refutational-Different</td>
<td>7.15 (18)</td>
<td>8.14 (22)</td>
</tr>
</tbody>
</table>

*Indicates number of subjects per cell
Table 3 shows that the mean belief level in the low self-esteem condition was 6.92 with no attack and no defense (neither/nor) and 3.90 with an attack-only. For the high self-esteem condition the group mean for neither/nor was 8.20 and 3.36 for attack-only.

Self-esteem levels are defined as a subject's mean score of 20 items along a 7-point continuum. The questionnaire may be found in Appendix A. Mean self-esteem scores ranged from 7.00 (High) to 3.10 (Low). The median split for all (200) self-esteem scores occurred at 5.70. Mean self-esteem scores for each cell are reflected in Table 4.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Subjects with High Self-Esteem</th>
<th>Subjects with Low Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neither/Nor</td>
<td>6.28 (24)*</td>
<td>5.10 (16)</td>
</tr>
<tr>
<td>Attack-Only</td>
<td>6.47 (19)</td>
<td>5.12 (21)</td>
</tr>
<tr>
<td>Supportive</td>
<td>6.19 (21)</td>
<td>5.02 (19)</td>
</tr>
<tr>
<td>Refutational-Same</td>
<td>6.24 (18)</td>
<td>4.96 (22)</td>
</tr>
<tr>
<td>Refutational-Different</td>
<td>6.16 (18)</td>
<td>4.99 (22)</td>
</tr>
</tbody>
</table>

*Indicates number of subjects per cell

In order to examine the immunizing effects of the three types of defenses on subsequent attacks, it was necessary that these attacks significantly reduce initial belief levels. If an attack were unsuccessful, the value of a defense would be questionable. Table 5 contains an
analysis of variance of the neither-nor/attack-only data from Table 2 in a 2 x 2 design.

TABLE 5

Analysis of Variance of Attack-Only and Neither/Nor Data on Initial Beliefs

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Self-Esteem (A)</td>
<td>2.52</td>
<td>1</td>
<td>2.52</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Attack (B)</td>
<td>299.84</td>
<td>1</td>
<td>299.84</td>
<td>34.07</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>A X B</td>
<td>16.31</td>
<td>1</td>
<td>16.31</td>
<td>1.85</td>
<td></td>
</tr>
<tr>
<td>Within Cell</td>
<td>669.11</td>
<td>76</td>
<td>8.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

f.99 (1-76) = 7.08

The main effect of the attack factor (Table 5) compares the initial belief level (neither/nor) and the attack-only conditions. Individual t tests performed between the neither/nor and attack-only means with each level of self-esteem produced t ratios significant at the p < .01 level for both high self-esteem groups and low self-esteem groups. The interaction between self-esteem level and attack factors was non-significant. In summary, the attack significantly reduced initial belief levels for both self-esteem levels.

Analysis of variance was also used to examine main effects of level of self-esteem, type defense, and interaction in a 3 x 2 design. The results are reported in Table 6.
### TABLE 6
Main and Interaction Effects for All Treatments Involving a Defense and an Attack

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Self-Esteem (A)</td>
<td>6.14</td>
<td>1</td>
<td>6.14</td>
<td>0.435</td>
</tr>
<tr>
<td>Defense Treatments (B)</td>
<td>4.36</td>
<td>2</td>
<td>2.18</td>
<td>0.15</td>
</tr>
<tr>
<td>A X B</td>
<td>33.66</td>
<td>2</td>
<td>16.83</td>
<td>1.07</td>
</tr>
<tr>
<td>Within Cell</td>
<td>1,633.88</td>
<td>114</td>
<td>14.33</td>
<td></td>
</tr>
</tbody>
</table>

F.95 (1-114) = 3.92  
F.95 (2-114) = 3.07

The results which follow are reported with respect to the four research questions:

1. What is the relationship between resistance to persuasion and general self-esteem?

Analysis of variance computational procedure for an unweighted-means with unequal cell frequencies did not reveal a significant F ratio. Hence, the data does not support previous reports of an inverse linear relationship between self-esteem and persuasibility. It is indicated that interactions did not occur as a function of self-esteem and defense type.

2. What type of defense is best suited for low self-esteem individuals to accomplish resistance to persuasion for moderately held beliefs?

To examine these questions and other questions involving comparison of pairs of means, the two-tailed t
test was selected as the appropriate statistical method. The more stringent two-tailed tests were employed since no direction predictions were involved.

Although there appeared to be no significant linear relationship, there is some evidence that the refutational-same seems to be the best suited defense for low self-esteem subjects. Table 3 illustrates that the refutational-same (8.57) is also higher (p < .10, t test) than the corresponding neither/nor (6.92) condition. While the refutational-same defense (8.57) did not produce a significantly higher mean belief level than the refutational-different (8.14), it did approach significance (p < .10, t test) in relation to the mean belief level produced by the supportive defense (6.88).

All three defenses produced a significantly (p < .01, t test) higher mean level of belief than the corresponding attack-only (3.90) condition. Thus, for the low self-esteem subjects all three defense types produced resistance to persuasion according to the operational definition of resistance.

3. What type of defense is best suited for high self-esteem individuals for moderately held beliefs?

The supportive defense (7.92) appears to be the best suited defense condition for high self-esteem individuals (see Table 3). The supportive defense (7.92) approached a significantly higher (.15 > p > .10, t test) mean level of belief than the corresponding refutational-same (7.17) or
refutational-different (7.15). All three defenses produced a significantly higher (p < .01, t test) mean level of belief than the corresponding attack-only (3.36) condition. Thus, as with low self-esteem subjects, resistance to persuasion was produced by all the defense types for the high self-esteem subjects.

4. Of supportive, refutational-same, and refutational-different, which defense is best suited for all subjects combined for moderately held beliefs?

The highest grand mean level of belief was produced by the mean of the refutational-same defenses (7.87). This mean level of belief is higher than the grand mean for all six defensive conditions combined (7.67). Refutational-different and supportive defenses grand mean belief levels were 7.65 and 7.40 respectively. All defense grand mean belief levels were significantly (p < .01, t test) higher than the corresponding grand mean belief level for the attack-only (3.63) condition.

Although the refutational-same defense appears to be the best suited for all self-esteem levels, it is essential to reiterate that, even though it is the best defense condition for low self-esteem subjects, it is not as effective as the supportive defense for high self-esteem subjects. Thus, when levels of self-esteem are combined, there appears to be little or no difference in the resistance-conferring efficacy between defense types.
Discussion

Discussion of the results is accomplished by treating each research question separately.

1. What is the relationship between resistance to persuasion and general self-esteem?

In contrast to Janis (1959), level of self-esteem was not a reliable predictor of persuasibility. According to previous studies, it would be predicted that low self-esteem subjects would score lower in the attack-only condition than the high self-esteem subjects. This is based upon the often cited theory that self-esteem and persuasibility form an inverse relationship. Yet, in this study the low self-esteem subjects scored higher (3.90) than the high self-esteem subjects (3.36). Though the difference between these figures did not reach statistical significance, they not only do not replicate previous research, but also appear to reveal a reverse trend. Further support for such a trend is seen in the comparative belief level depreciation from the neither-nor to the attack-only treatments for the two levels of self-esteem. While high self-esteem subjects dropped from 8.20 to 3.36, a drop of 4.84, low self-esteem subjects decreased from 6.92 to 3.90, a drop of only 3.02 (see Table 3).
In the current study, any prior defense was significantly (p < .05, t test) advantageous in maintaining the initial belief level for all subjects. Inoculation theory would predict that the refutational defenses would produce more resistance than the supportive defense. However, for high self-esteem subjects, supportive (7.92) appeared to represent the best defense, though it was not significantly (.10 < p < .15, t test) superior to the refutational-same (7.17) or refutational-different (7.15) defenses. This deviant result may be directly attributed to the use of moderate beliefs used in this study in comparison with McGuire's use of cultural truisms. McGuire (1961a, p. 332) recognized the limitation of cultural truisms:

Had the beliefs been controversial rather than truisms, the subjects would have been more practiced in defending them, and, hence, would have participated more effectively in the active defense conditions and would have been less in need of a threatening defense stimulating pre-exposure. Had the issues been less involving than these health ones, there would have been more to gain, in regard to motivating the subject to pay adequate attention to the material from requiring his active participation in the defense. Hence, with different types of issues we would expect resulting differences not only in the size of the obtained results, but even in the directions.

Pryor (1972) reasoned that subjects should already possess a level of awareness regarding the vulnerabilities of their middle-range beliefs, and would therefore be able to conjure arguments in its defense. Pryor (1972) predicted that the supportive defense would confer a significant amount of resistance to attack for moderately held beliefs.
Although he obtained only minor support, the supportive defense did reduce the effects of the attack to a non-significant level.

Braden (1962) reported that the refutational was not superior to the supportive defense in inducing resistance. However, Pryor (1972) stated that Braden's replication of McGuire's procedures was not precise and that such methodological differences may have led to her variant findings on the supportive defense.

The superiority of the supportive defense for high self-esteem subjects is reported by Cohen (1959) when he asserted that subjects of high self-esteem appeared to be less responsive to outside influence and were characterized by a preference for defenses which help them ignore challenging defenses and conflicting communication. Cohen (1959) also reported that subjects with low self-esteem show a preference for more expressive and challenging defenses. Further support for this reasoning was reported by Leventhal and Perloe (1962), when they stated that high self-esteem subjects tended to change more towards optimistic (supportive, 7.92) communications than pessimistic (refutational-same, 7.17; refutational-different, 7.15) ones, while low esteem subjects showed the opposite tendencies for optimistic (supportive, 6.88) communications and pessimistic (refutational-same, 8.57; refutational-different, 8.14) communications. It seems logical to postulate that the supportive defense, which contains only belief-supporting information, is more optimistic than the refutational defenses.
This study suggests that there is not a positive linear relationship between resistance to persuasion and self-esteem. To the extent that resistance to persuasion is the mirror image of persuasibility, the results contradict the common notion of an inverse linear relationship between persuasibility and self-esteem.

Gollob and Dittes (1965) reasoned that the findings of increased persuasibility for those with lower self-esteem probably depended on specific characteristics of the communication. By varying crucial aspects of the communication, such as threat and message complexity, they predicted varying relationships between self-esteem and persuasibility. Cox and Bauer (1964) suggested that the linear relationship previously reported among male subjects required modification. The results of their study showed that under some conditions subjects with very low self-esteem actually became counter-persuasible. Gollob and Dittes (1965) also reported that their results provided little illumination concerning comparisons between persuasibility and self-esteem. Measures of self-esteem were not significantly related to any of the opinion measures. Finally, their "results emphasize that self-esteem may affect persuasibility through differential 'learning' of the communication as well as through the more commonly considered process of the 'acceptance' of the communication (p. 200)."
2. What type of defense is best suited for low self-esteem individuals to accomplish resistance to persuasion for moderately held beliefs?

According to the definition of resistance used by McGuire and also in this study, resistance occurs when a defense-attack condition produces a mean belief level significantly higher than its corresponding attack-only treatment. In this sense, resistance occurred under all defense conditions for subjects of low self-esteem.

As mentioned previously, McGuire (1964) reported the superiority of the refutational form of defenses over supportive for cultural truisms. Pryor (1972) offers some support that the same may be true of moderately held beliefs. In the current study, although the corresponding mean belief levels for the refutational defenses are in the expected direction, significant differences were not observed among the three.

It is interesting to note that, although all three defenses achieved significantly \( p < .05, \) \( t \) test) higher mean belief levels than their corresponding attack-only treatments, only refutational-same (8.57) and refutational-different (8.14) produced mean belief levels higher than the corresponding neither/nor (6.92) condition. The difference between refutational-same and the neither/nor control approached significance \( p < .10, \) \( t \) test) while the refutational-different \( p < .30, \) \( t \) test) condition does not. The supportive condition (6.88) produced a slightly lower mean level than the neither/nor condition. Thus, of the
three defenses, a form of refutational defenses appears to be best suited for individuals of low self-esteem. These results are in line with the previous research reported above.

Another possible explanation for the results obtained from low self-esteem subjects occurs as a direct relation to their initial belief level. Since the low self-esteem neither/nor condition was below 7.0 (6.92), subjects actually scored in the "slightly disagree" category. Pryor (1972) speculated that "defenses which attempt to increase the level of belief on topics which rank low in initial belief level may be viewed as counter-attitudinal in nature (p. 25)." Thus, the defenses for low self-esteem could probably be defined as counter-attitudinal. Unlike cultural truisms, subjects were probably not motivated to defend these beliefs as a result of threatening mention of arguments, such as conferred by the refutational defenses. It is possible that motivation could be derived as a result of a weak form of dissonance caused by reading the slightly counter-attitudinal defenses. Researchers have reported that when insufficient rewards or punishments are given for engaging in counter-attitudinal acts, dissonance may be reduced by attitude change in the direction advocated in the counter-attitudinal message (Aronson and Carlsmith, 1963; Cohen and Brehm, 1962; Freedman, 1965; and Nuttin, 1966).

Counter-attitudinal advocacy may have caused attitude change in the direction of advocation due to the subject's
inability to justify or rationalize his participation in a counter-attitudinal act. This may partially explain the finding that for low self-esteem subjects, two of the three defense types (refutational-same and refutational-different) produced mean belief levels appreciably higher than the initial control belief level.

3. What type of defense is best suited for high self-esteem individuals for moderately held beliefs?

Resistance to persuasion also occurred under all three defense conditions ($p < .01$, t tests) for subjects of high self-esteem. However, unlike the low self-esteem subjects, the high self-esteem subjects seemed to benefit most from the supportive defense condition (7.92) as opposed to the refutational-same (7.17) or refutational-different (7.15) defense conditions. Although the corresponding mean belief levels did not occur as McGuire might have suspected (see Table 3), statistically significant ($0.15 > p > 0.10$, t test) differences were not observed among the three.

It is also conceivable that moderately held beliefs, as defined in this current study and by Pryor (1972), are more ego-involving than the cultural truisms used by McGuire (1964). It is suggested that more ego-involving topics may have motivated subjects to defend current beliefs, thus rendering the supportive defensive message more effective. This reasoning is in line with the results reported by Pryor (1972).

Another principal difference is noted for high self-esteem subjects when we examine the corresponding differences
between the mean belief level of the neither/nor condition and the mean belief levels of the three defense conditions. Whereas, the two refutational defenses for low self-esteem subjects produced mean belief levels higher than the corresponding neither/nor condition, none of the defense conditions for subjects with high self-esteem (supportive 7.92, refutational-same 7.17 and refutational-different 7.15) attained or exceeded the mean belief level in the neither/nor condition (8.20). There does not appear to be a defense which is clearly a best suited condition for high self-esteem subjects.

4. Of supportive, refutational-same, and refutational-different, which defense is the best suited for all subjects combined for moderately held beliefs?

McGuire's research has repeatedly demonstrated that the refutational-same defense condition ranks as the most effective immunizer, followed by the refutational-different and supportive defense conditions in that order. Combining the six means produced by all defense conditions in this study, a grand defense mean of 7.67 is obtained. The grand mean produced by the refutational-same conditions is 7.87. The corresponding grand mean for the refutational-different defenses is 7.65, and for the supportive defenses it is 7.40. The refutational-same defense has the only grand mean greater than the overall grand mean. Thus, these grand means produced mean belief levels which are in the same order the inoculation theory would predict. In
addition, Pryor (1972) reports the identical trend occurs for initially low and moderately-held beliefs.

In light of McGuire's (1964), Pryor's (1972) and the current study, it seems reasonable to conclude that the practitioner is best advised to employ the refutational-same defense technique as a belief-maintaining device. This defense appears to be the most successful if self-esteem is unknown, as is usually the case.

A large within cell variance of mean belief levels may have contributed to some of the non-significant results. A possible reason for this large variance is that several of the test booklets were returned with the appearance of deliberate mismarkings and a few profane remarks. However, a separate analysis of variance was accomplished, deleting those particular booklets, and the results did not differ from those reported. Another plausible explanation for the large variance of scores is the wide range of intelligence, income, age, and sociometric status of the subjects examined in the current study. However, this is not a plausible basis for assuming that the same results would not occur under similar conditions if replicated.

Perhaps certain departures from the McGuire procedures contribute to the lack of significant differences between defense types. The current experiment employed independent control groups for comparison with experimental group data. McGuire (1964) rotated subjects around treatments, with
each subject supplying either experimental or control data on all issues. While McGuire employed anywhere from 24 to 80 subjects per cell in his experiments, the current study used approximately 20 subjects per cell. It is possible that a larger sample would have produced results even more consistent with inoculation theory since with a larger sample a small difference is more likely to show up as significant.

Finally, it is perhaps unreasonable to expect a trait of personality to correlate with persuasibility to such a high degree that the individual would respond with agreement to any statement on any topic emanating from any source. For example, regardless of differences in personality traits, strong pressure may move everyone in the direction of intended influence. On the other hand, if the pressure is weak, and explicit demands are not made on the individual, then relevant personality traits might produce greater differences in observed behavior.

This study obviously needs replication with attention paid to such potentially relevant variables as ego-involvement, controversial beliefs, and message intensity. The present study is no exception to the rule that research generates more questions than it answers.
Summary

The purpose of this investigation was to determine the relationship between resistance to persuasion and generalized self-esteem. Resistance was studied as a function of pretreatments which, when administered to a receiver, would render him less susceptible to persuasive messages than he was found to be without these pretreatments. The research design followed the McGuire inoculation theory paradigm, except that moderately-held beliefs were used instead of cultural truisms as topics.

In order to examine this phenomenon, an experimental group (3 x 2 design) and a control group (2 x 2) was employed. The experimental group was divided into high and low self-esteem groups, via median split of self-esteem scores, with each subject randomly receiving one of the three defensive conditions: refutational-same, refutational-different or supportive. The control group, also divided into high and low self-esteem groups, received an attack-only or a neither defense, nor attack condition.

Analysis of variance did not reveal a significant \( F \) ratio for main and interaction effects. Hence, the data did not support previous reports of an inverse linear relationship between self-esteem and persuasibility.
There was some evidence that the refutational-same defensive condition was the best suited defense for low self-esteem subjects, while the supportive defensive condition appeared superior for high self-esteem subjects. Although the refutational-same defense appears to be the superior defense for all subjects combined, there does not appear to be a significant difference in the resistance-conferring efficacy between defense types for moderately-held beliefs.

The relationship between resistance to persuasion and generalized self-esteem seems to support Cohen's (1959) interaction hypothesis, rather than a generalized form of the simpler hypothesis of an inverse linear relationship between esteem and persuasibility reported by Janis (1954) and Janis & Field (1959), and Janis and Rife (1959). Cohen (1959) proposed that other personality factors interact with self-esteem to produce communication outcomes. This study does not demonstrate a generalized relationship between self-esteem and persuasibility.

We should avoid generalization based on the data reported in this study until future replication by other researchers. Many statistically insignificant trends were obtained, including statistically insignificant reversals from predicted associations.

The results are consistent with the theory that those of high and low self-esteem have different defensive orientation (Hovland and Janis, 1966). These researchers
speculated that high self-esteem subjects tend to ignore or avoid confrontations, while low self-esteem subjects are more likely to be receptive to anxiety-provoking messages. The fact that the supportive defenses produced the highest mean belief level for the high self-esteem subjects and the lowest for the low self-esteem subjects is in line with this reasoning.

The results of this study indicate that differences in self-esteem are associated with considerable differences in an individual's responses to external pressures. Self-esteem seems to mediate stimulus and response much the same as a lens might mediate the perception of an object. Additional research is needed to determine that if in a mass persuasion situation, once opinion change has occurred and new information or persuasion has been accepted, regression over a period of time and under the pressure of ordinary events would occur differentially with regard to self-esteem.
APPENDIX A

SELF-ESTEEM QUESTIONNAIRE
**Self-Esteem Questionnaire**

Below is a series of statements. Indicate how you feel about each by circling the appropriate numbers. For example, number 1 indicates very strong agreement with the statement, number 4 indicates neutral feelings, and number 7 indicates very strong disagreement.

<table>
<thead>
<tr>
<th></th>
<th>AGREE</th>
<th>DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel that I am a person of worth, at least on an equal plane with others</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>2.</td>
<td>I am an attractive person</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3.</td>
<td>I feel that I have a number of good qualities</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>4.</td>
<td>I like to look nice and neat all the time</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>5.</td>
<td>All in all, I am inclined to feel that I am a failure</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>6.</td>
<td>I have a lot of self-control</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>7.</td>
<td>I am able to do things as well as most other people</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>8.</td>
<td>I am popular with women</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>9.</td>
<td>I feel I do not have much to be proud of</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>10.</td>
<td>I like my looks just the way they are</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>11.</td>
<td>I take a positive attitude toward myself</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>12.</td>
<td>I would like to change some parts of my body</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>13.</td>
<td>On the whole, I am satisfied with myself</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td>AGREE</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>14.</td>
<td>I am not the person I would like to be</td>
<td>1 2</td>
</tr>
<tr>
<td>15.</td>
<td>I wish I could have more respect for myself</td>
<td>1 2</td>
</tr>
<tr>
<td>16.</td>
<td>I try to change when I know I'm doing things that are wrong</td>
<td>1 2</td>
</tr>
<tr>
<td>17.</td>
<td>I certainly feel useless at times.</td>
<td>1 2</td>
</tr>
<tr>
<td>18.</td>
<td>I can always take care of myself in any situation</td>
<td>1 2</td>
</tr>
<tr>
<td>19.</td>
<td>At times I think I am no good at all</td>
<td>1 2</td>
</tr>
<tr>
<td>20.</td>
<td>I find it hard to talk with strangers</td>
<td>1 2</td>
</tr>
</tbody>
</table>
APPENDIX B

FILLER ATTITUDE QUESTIONNAIRE
We are interested in determining the extent to which the reading comprehension score obtained in this test is affected by the person's feeling about the topics discussed. Hence, we here ask you to indicate your personal feelings about the truth of the statements listed below by circling the one number that best indicates your judgment of the truth of that statement. Notice that the larger the number the more true the statement is judged; the smaller the number the more false it is judged.

Please respond to each of the following statements by indicating your own personal opinion of the statement's truth, regardless of whether your opinion agrees or disagrees with some or all of the material read in this test. Answer the questions in the order presented, and do not skip any question. Work rapidly, as only three minutes are allowed for answering all questions.

Only a small number of traffic accidents in the U. S. are attributable to vehicle failures.

1. Definitely
2. Probably
3. Uncertain
4. Probably
5. Definitely
6. False
7. False

Everyone should brush his teeth after every meal if at all possible.

1. Definitely
2. Probably
3. Uncertain
4. Probably
5. Definitely
6. False
7. False

Compared to other factors of accident causation, vehicle defects are of little consequence.

1. Definitely
2. Probably
3. Uncertain
4. Probably
5. Definitely
6. False
7. False

Everyone should see his doctor at least once a year.

1. Definitely
2. Probably
3. Uncertain
4. Probably
5. Definitely
6. False
7. False

(Attitude Questionnaire: Version 1)
If automobiles on U. S. roads were 100% free of defects, the number of traffic accidents would still not be substantially reduced.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Uncertain</th>
<th>Definitely</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>False</td>
<td>False</td>
<td>Uncertain</td>
<td>Probable</td>
<td>True</td>
</tr>
</tbody>
</table>

Brushing one's teeth can become a harmful practice, if one does it too often.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Probably</th>
<th>Uncertain</th>
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Vehicle malfunctions are a minor contributor to the traffic safety problem in the U. S.

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APPENDIX C

RELEVANT ATTITUDE QUESTIONNAIRE
(Attitude Questionnaire: Version 2)

We are interested in determining the extent to which the reading comprehension score obtained in this test is affected by the person's feeling about the topics discussed. Hence, we here ask you to indicate your personal feelings about the truth of the statements listed below by circling the one number that best indicates your judgment of the truth of that statement. Notice that the larger the number, the more true the statement is judged; the smaller the number the more false it is judged.

Please respond to each of the following statements by indicating your own personal opinion of the statement's truth, regardless of whether your opinion agrees or disagrees with some or all of the material read in this test. Answer the questions in the order presented, and do not skip any question. Work rapidly, as only three minutes are allowed for answering all questions.

A large number of traffic accidents in the U. S. are attributable to vehicle failure.

Definitely Probably Uncertain Probably Definitely
False False True True

Everyone should brush his teeth after every meal if at all possible.

Definitely Probably Uncertain Probably Definitely
False False True True

Compared to other factors of accident causation, vehicle defects are of great consequence.

Definitely Probably Uncertain Probably Definitely
False False True True

Everyone should see his doctor at least once a year.

Definitely Probably Uncertain Probably Definitely
False False True True
If the automobiles on U. S. roads were 100% free of defects, the number of traffic accidents would be substantially reduced.

| 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 | Definitely/Probably/Uncertain/Probably/Definitely |
| False/False/Uncertain/True/True |

Brushing one's teeth can become a harmful practice, if one does it too often.

| 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 | Definitely/Probably/Uncertain/Probably/Definitely |
| False/False/Uncertain/True/True |

Vehicle malfunctions are a major contributor to the traffic safety problem in the U. S.

| 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 | Definitely/Probably/Uncertain/Probably/Definitely |
| False/False/Uncertain/True/True |
APPENDIX D

EXPERIMENTAL MESSAGES
Vehicular Defects: A Frequent Cause of Traffic Accidents

Research on traffic safety has received vastly increased attention over the past two decades. Previous to 1950, little was known about accident causation. However, the ever increasing annual highway accident figures have made it imperative that both government agencies and private industry work toward a solution to the traffic accident problem. Research programs, funded largely by the National Highway Traffic Safety Administration (NHTSA) and the auto manufacturers, were initiated with the belief that traffic safety could best be improved by the application of scientific and quantitative methods, both to the study of the accident problem, and to the study of remedies for it. The findings of the past twenty years cite many causes for the traffic accident problem. A highly frequent contributor has proven to be vehicular malfunctions. Each day thousands of automobiles are mass produced on Detroit assembly lines and scattered to dealerships across the country. An alarmingly high percentage of these cars leave the factories with at least one defective part. Unfortunately, this is only the beginning of the problem. Few car owners take a preventive approach to automobile maintenance. Instead, they wait until they are without transportation, due to a damaged or worn out part, to visit the repair garage.

It is the rare car buyer who is not forced to return to the dealership within weeks of his purchase for adjustments or repairs on his shiny new machine. Since most people are still enveloped with pride over the looks and performance of the new car, the inconvenience caused by this early visit to the service department is quickly forgotten. On the other hand, individuals who have been caused more than inconvenience are less likely to forget. The highest percentage of unit defects in mass produced automobiles occurs with cars built on Mondays and Fridays, when partying and drinking practices affect the highest number of both blue and white collar workers. Recent studies involving examinations of late model cars involved in fatal accidents, have indicated that many crashes heretofore attributed to careless or reckless driving, may have been caused by vehicular defects such as brake failure, a loose steering rod bolt, etc. Arthur Little's recent book entitled The State of The Art of Traffic Safety reports that "In spite of the industry's effort, defective vehicles are produced and sold. He noted further that all 32 cars tested by NHTSA in 1968, showed trouble within the first 5,000 miles of driving."
The best method of preventing accidents caused by vehicular defects is by replacing old or badly worn parts. Unfortunately, such a preventive approach to highway safety is seldom taken in today's world of high repair costs and limited time available to properly maintain an automobile. For most Americans, it is time to bring the car to a repair shop only when it has stopped running. Mosely (1963) studied in detail over one-hundred fatal accidents in the Boston area and concluded that "many 'accidents' are due to vehicular failures." He pointed to accidents in which cars were improperly repaired and others in which the lack of preventive maintenance was instrumental. Typically, Americans drive with brakes which have lost 50% of their efficiency. In 1969, the State of Illinois asked dealers and garages to inspect the brake systems on cars brought in for other work. Out of 494 vehicles inspected, 336 (68%) showed at least one brake defect. Since defects of some sort are to be expected in any mass-produced item on a statistical basis, and since individual parts of any machine do wear out with use, preventive maintenance is a necessary practice if we are to decrease the high number of traffic accidents caused by vehicular malfunctions.
(Refutational Defense: Medium-Range Belief)

Vehicular Defects: A Frequent Cause of Traffic Accidents

Over the past two decades traffic safety research programs, funded largely by government agencies such as the National Highway Traffic Safety Administration (NHTSA) and by the automobile industry, have made great progress in the study of accident causation. The findings of the past twenty years have done much to clarify the relative roles of human and vehicular factors in traffic accidents. As a result of this research, it is now known that vehicular factors are a highly frequent contributor to traffic accidents. Unfortunately, there have been occasional articles in the press which argue that vehicular defects do not play a major role in the traffic accident problem. Before our ever increasing traffic problems can begin to be solved, it is necessary that the American public be informed of what research scientists have learned about accident causation. Thus, it is important to review misleading and distorted information. It has been claimed, for example, that "human factors," driving while under the influence of alcohol and driving too fast, are the primary causes of traffic accidents. Some critics have cited the low number of vehicular causes of traffic accidents reported in police department annual statistical summaries. Let us examine the fallacies inherent in each of these arguments.

To argue that drunk driving and excessive speed are the primary causes of accidents is to ignore the body of research findings gathered in controlled studies of accidents. These investigations show unequivocally that drunk driving and speeding are responsible for only a small percentage of traffic accidents. For example, Borkenstein (1968) studied 5,987 accidents on Michigan roadways and concluded that only 3.2 percent of the drivers had blood alcohol concentrations equal to or exceeding the legal limit. Speeding was cited as a causal factor in an even smaller percentage of these accidents. Further, the assertion that humans are to blame for accidents by no means conflicts with the "human factor" theory. Vehicular defects are caused by humans who build cars, and are caused and perpetuated by humans who fail to properly maintain their cars. While it is important to realize that many factors contribute to the total traffic accident problem, we cannot afford to ignore the evidence which points to vehicular malfunctions as a highly frequent contributor to highway crashes.
Another example of a misleading argument against recent findings is that police department annual statistical summaries do not show a high incidence of vehicular failures in traffic accidents. This is certainly not a surprising finding since police officers who are called to the scene of an accident are neither mechanics, nor are they required to inspect the individual parts of the cars. Their primary purposes are to attend to the injured, clear the roadway, restore normal traffic flow, and file a concise report of the participation of each driver and passenger involved in the accident. Reporting of vehicular defects is done only when such defects are obvious, such as blown-out tires. Since in most cases the assignment of fault determines financial responsibility for damage and injury, police officers are often reluctant to label even obvious vehicle defects as causal unless they have personally witnessed the accident. When police officers do report vehicular defects, it is usually within the context of the testimony of a driver, passenger, or witness. Thus, in the vast majority of accidents, no attempt is made to check for vehicular causes. It is not, therefore, surprising that police summaries fail to accurately reflect the findings of recent controlled research.
The Automobile: An Infrequent Cause of Traffic Accidents

In light of much controversy regarding the causes of our increasing traffic accident problem, recent investigations have attempted to place the various contributing factors into proper perspective. To the surprise of few researchers, the factors of driving while under the influence of alcohol and excessive speed have proven to be the two most frequent contributors to traffic accidents. Despite the assertions of some independent research groups, vehicular factors do not appear to be a frequent cause of accidents. This can be seen in the low percentage of vehicular failures cited in national summaries of police department statistics on accident causation. Because it is important that everyone who drives a motor vehicle understands the causes of our growing traffic safety problem, it is useful to examine in detail the evidence which has led professional researchers to isolate human factors, driving under the influence of alcohol, and speeding, as the most common contributors to traffic crashes.

For several years, professional researchers have theorized that the driver, the human factor, is the primary source of our traffic accident problem. The U.S. Department of Transportation (DOT) and the automobile industry have responded to the need for research funds necessary to explore the role of human factors in traffic crashes. In 1969, DOT appropriated over 100 million dollars to finance alcohol safety action programs in 40 U.S. cities. The projects were designed in part to define the role of alcohol in traffic crashes. By early 1970, initial results began to accumulate in Washington. National averages indicated that in approximately 55% of all fatal accidents, at least one of the drivers had a measurable blood alcohol content. The smallest ratio of alcohol involvement was reported in Denver, Colorado, where 34% of the crashes showed at least one driver who had been drinking. While statistics involving non-fatal crashes were not quite as high, they left no doubt that alcohol is a primary contributing factor to our traffic accident problem. Ranking a close second is another human factor, excessive speed. As in the case of alcohol, the more serious the accident, the greater the likelihood that speeding was a contributor. Together, the human factors of alcohol and speeding account for the majority of traffic crashes.
A second source of data which serves to clarify the role of vehicular malfunctions in accident causation is the annual nationwide summary of accident statistics compiled by individual police departments and published by the National Safety Council. In 1970, less than 3% of all reported accidents were found related to vehicular defects. Further, the National Safety Council asked officers in 144 police departments across the country to complete a short questionnaire on each accident. The questionnaire asked for the officer's opinion of the causes of the accident. The data were collected in a completely anonymous manner, identifying neither the accident participants nor the officer, thus removing the threat of use of the information as court evidence by one of the involved parties. Since the police officers could thereby freely evaluate and report all possible causes, it is significant that results showed only a statistically trivial increase over the national average in the percentage of accidents attributed to vehicular failure. These and other recently recorded data provide convincing evidence that vehicular malfunctions play an insignificant role in our traffic accident problem.
In light of much controversy regarding the causes of our increasing traffic accident problem, recent investigations have attempted to place the various contributing factors into proper perspective. To the surprise of few researchers, the factor of "driver inattention," lack of alertness, has proven to be the most frequent contributor to traffic crashes. Research findings have isolated another factor, hazardous roads, as the second most frequent contributor to automobile accidents. Despite the assertions of some independent research groups, vehicular factors do not appear to be a frequent cause of traffic accidents. Because it is important that everyone who drives a motor vehicle understands the causes of our growing traffic accident problem, it is necessary to examine in detail the evidence which has led professional researchers to isolate "driver inattention" and hazardous road conditions as the most common contributors to traffic crashes.

For several years, professional researchers have theorized that the driver, the human factor, is the primary source of our traffic accident problem. The U. S. Department of Transportation (DOT) and the automobile industry have responded to the need for research funds to explore the role of human factors in traffic crashes. In 1969, DOT appropriated over 100 million dollars to finance post-accident investigations of several hundred accidents in each of 40 U. S. cities. As part of each investigation, an interview questionnaire was administered to drivers. These drivers were asked to assess the degree to which vehicular, human, road, and other environmental factors contributed to their accident. The results isolated a factor which was labeled "driver inattention" as a contributing factor in 55% of the total accidents. Reasons given for inattention were varied, ranging from physical fatigue, to reprimanding a child in the back seat, to "daydreaming." DOT concluded that Americans take the driving task very much for granted; so much so that they seldom devote it complete attention under normal driving conditions.

Another important finding of the DOT study regards the role of hazardous road conditions in traffic accidents. Hazardous roads were found to be the second most frequent
contributor to crashes. Arthur Little, writing recently in *The State of the Art of Traffic Safety* summarized his review of related research by stating that "Information available on the various aspects of the roadway itself is extensive and has been well documented over a considerable number of years. Factors which emerge as particularly important are the problems associated with skidding and nighttime driving." Mills and Shelton (1968) studied highway accidents in Virginia and found that 40% of all reported accidents over a one-year period involved skidding. Significantly, in one-third of these accidents, the skidding occurred before brake application. Such controlled investigations have clearly established hazardous road conditions as a frequent contributor to traffic accidents. Further, these and other recently recorded data provide convincing evidence that vehicular malfunctions play an insignificant role in our traffic accident problem.
The Benefits of Brushing Teeth after Every Meal

Even though we all recognize the wisdom of brushing our teeth after every meal, this practice is so important that it is worthwhile to review some of the reasons for carrying out this valuable health measure. Naturally, tooth brushing improves the appearance of our teeth, something that is desirable in itself. More important, science has demonstrated many health benefits deriving from brushing our teeth. Tooth brushing has been found to be of importance even in combating other mouth diseases besides tooth decay. And, by preventing these oral diseases, tooth brushing after every meal also reduces the complications in other parts of our body which are often the results of unchecked tooth decay. Because of the extreme importance of the practice, let us review briefly some of the reasons why brushing one's teeth after every meal is so necessary for the preservation of health.

Besides reducing tooth decay, brushing the teeth after every meal has additional health benefits. There are a number of other mouth diseases as unpleasant as tooth decay that are produced by mouth bacteria. These bacteria can, for example, cause diseases of the gums such as pyorrhea (or Riggs' disease). These diseases are painful and unattractive themselves and unless quickly checked, can lead to loss of teeth and other secondary complications. In addition, they have some unexpected side effects such as malnutrition, since the sufferer is unable to continue his normal solid diet while the conditions continue. Brushing the teeth also reduces the concentration of the bacteria that cause these diseases (just as it reduces the concentration of the decay-causing bacteria) in three ways: by mechanically dislodging the bacteria; by removing the food particles they need in order to grow; and by the introduction of bacteria-killing chemicals in the tooth paste. Hence, frequent tooth brushing is important, not only for the prevention of tooth decay, but also as a guard against other mouth diseases.

Not only does tooth brushing directly reduce tooth decay and other mouth diseases, but by helping to maintain good oral hygiene, it also aids in keeping other parts of the body healthy. Tooth decay, for example, is basically a chronic infection, and like any other infection, it has
harmful effects not just on the directly affected areas, but also upon the body as a whole. Such chronic infections tend to lower the person's resistance to all diseases and often affect other specific organs. For example, we know that many cases of liver and kidney diseases as well as poor eyesight and even blindness, can be traced back to tooth decay. While tooth decay is not responsible for all kidney, liver and eye diseases, more of these diseases are due to chronic infection from tooth decay than is generally recognized. Therefore, brushing the teeth after each meal not only constitutes good oral hygiene, but it also makes for good general body health.
The Benefits of Brushing Teeth after Every Meal

Even though we all recognize the wisdom of brushing our teeth after every meal, the practice is so important that it is worthwhile to review some of the reasons for carrying out this valuable health measure. Naturally, tooth brushing improves the appearance of our teeth, something that is desirable in itself. More important, science has demonstrated many health benefits deriving from brushing our teeth. Tooth brushing provides the best means we have of eliminating decay-causing bacteria which can destroy both teeth and gums. Such decay-preventing measures have become especially important nowadays when our changing food habits are tending to increase the likelihood of tooth decay. Let us look briefly into some of the reasons why brushing one's teeth after every meal is so important.

It has been known for a long time that the major cause of tooth decay (dental caries) is a general class of oral bacteria which are commonly known as "decay bacteria." A certain amount of these bacteria which attack and damage teeth and gums are found in the human mouth at all times. Brushing one's teeth tends to remove these bacteria both mechanically and chemically. Several dental schools in this country and abroad have conducted experiments in which they have measured the number of bacteria present in the mouths of people who brushed their teeth after every meal and those who did not. It was found that approximately 78% of the decay bacteria were eliminated after each brushing. (Since the remaining bacteria multiply very rapidly between and during meals, it is important to brush one's teeth again after each meal.) It was also found that regular tooth brushing reduces the decay by as much as 70% below what it is with only occasional brushings. Thus, by killing these decay bacteria brushing one's teeth after every meal considerably reduces tooth decay.

While brushing one's teeth after every meal has always been a recommended health practice, it has become more important than ever today because of changes in our eating habits. In this country, we are now eating a richer diet than ever before. Each year, we find a large increase in the per person consumption of such foods as fruit juices, soft drinks, cakes, candies, etc., which are
the very foods which are most likely to cause tooth decay. Furthermore, there is an increasing tendency to eat between meals: the coffee break, the coke break, the after-the-movie soda, and the TV or bedtime snack are becoming more and more popular. This between-meal food intake notably increases the possibility of tooth decay. Hence, to counteract these dietary trends that threaten to make the tooth decay problem even greater than before, it has become increasingly important that we take the most effective counter-measure against decay, namely, brushing our teeth after every meal.
APPENDIX E

INSTRUCTIONS TO THE SUBJECTS
SKILLS BOOKLET

On the following pages you will find short essays on several topics. These essays have been prepared by a research team at the Institute for Social Research, and are designed to test reading skills. Please follow closely the instructions below. If you have a question, come to the front of the room and ask it privately. Do not ask it aloud.

Instructions

(1) Do not turn this, or any, page until asked to do so.

(2) When instructed, read the following page at a fairly rapid pace, underlining what you believe to be the crucial clause (or group of words) in each paragraph. You will be given 5 minutes to complete each page. When you finish a page, stop and await further instructions.

(3) At no time should you turn back to a previous page.
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