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## Resistance to Persuasion: The Effects of Varying Belief Level; Double Defense Order; and Time in an Inoculation Paradigm

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RESISTANCE TO PERSUASION: THE EFFECTS OF VARYING  
BELIEF LEVEL; DOUBLE DEFENSE ORDER; AND TIME IN  
AN INOCULATION PARADIGM

BY

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B.A., Florida Technological University, 1977

THESIS

Submitted in partial fulfillment of the requirements  
for the degree of Master of Arts: Communication  
in the Graduate Studies Program of the College of Social Sciences  
of Florida Technological University at Orlando, Florida

Summer Quarter  
1978

## ACKNOWLEDGMENTS

Several people have made the obtainment of this goal possible.

First, I must thank and commend Dr. Albert Pryor. From the first time I entered F.T.U. as an undergraduate in 1976 he has been my source of knowledge and motivation in school. Without his countless hours of help and guidance I would not be so near to achieving this life-long dream.

Another individual that deserves mention is Dr. Raymond W. Buchanan. If he had not untangled the administrative mess that I had placed myself in, I could never have entered graduate school.

Special thanks must also go Dr. Ed Wycoff for his participation as a substitute committee member at my oral defense.

Two other individuals outside the university community deserve mention. Mary Adams a professor at Valencia Community College made this degree worth something: a job. And finally I owe a deep debt of gratitude to Monica, god only knows how she tolerated me for these three years.

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## INTRODUCTION

Since the time of Aristotle and Plato, man has been concerned with the process of persuasion. Volumes of research have been compiled discussing the variables that affect the persuasibility of an individual; the persuasiveness of a message; or the persuasiveness of a source. Curiously however, relatively little research has been done on the other side of the persuasion coin, resistance to persuasion. The purpose of this study is to explore certain logical extensions of the existing research on resistance to persuasion.

One of the earliest attempts to study this phenomenon occurred during World War II. A research team composed of Hovland, Lumsdaine, and Sheffield were contracted by the U.S. Army to discover a way to render soldiers resistant to the overly optimistic viewpoint that the war would be over soon. Hovland et al. (1949) designed messages which presented either one side (the war will not be over soon) or two sides of the issue pertaining to the length of the war. The results indicated that a two-sided appeal produces more attitude change than a one-sided appeal with receivers who are initially opposed to the message and with educated audiences. One-sided messages were found superior only in the case of an uneducated audience initially in favor of the message. Lumsdaine and Janis (1953) extended this

research by demonstrating that two-sided messages confer significantly more resistance to subsequent propaganda than one-sided messages. A number of the other approaches have been taken toward the study of resistance to persuasion. Bennett (1955) found a significant tendency for subjects who are asked to come to a private decision to persist longer in their intention than those not so requested. Such enhanced persistence may readily be interpreted as an increased resistance to the contrary pressures occurring in the interim.

Fisher, Rubenstein, and Freeman (1956) found that public identification of one's opinions constituted a firmer commitment than a private commitment; hence a more resistant opinion would be formed. Corroborating evidence has been produced by Lewin (1958); Hovland, Campbell and Brock (1957); Cohen, Brehm and Latane (1959).

Another type of commitment was studied by Rosenbaum and Zimmerman in 1959. It was found that, "if a person is committed to a belief 'externally,' by being told someone else thinks the person holds that belief, the person does indeed show an increased adherence to the belief" (Rosnow and Robinson, 1967, p. 261).

One other area of research approaches resistance to persuasion in terms of anchoring the belief to other cognitions (Rosenberg 1959, Zajonc 1960). Beliefs have also been anchored to other beliefs, and finally to valenced sources and reference groups, all

in an attempt to induce resistance to persuasion.

The most comprehensive body of research dealing with resistance to persuasion was developed by William McGuire. His inoculation theory is based upon pretreatments (defensive messages) which "immunize" receivers against persuasion by subsequent counterattitudinal messages. Since the current investigation was stimulated by questions arising from McGuire's findings, a thorough review of inoculation theory research is necessary.

McGuire's research on inducing resistance to persuasion grew out of a biological analogy to inoculation. In the biological sense an individual is inoculated against a subsequent massive viral attack by receiving a weakened form of that virus. The inoculation given against polio is strong enough to allow an individual's system to build up anti-bodies. It gives the body both motivation and, one might say, practice in defending itself against polio. It can also be argued that resistance to a disease may be augmented by supportive therapy such as a good diet, the right amount of sleep, and vitamin supplements. One would expect inoculation to be found superior to supportive therapy in providing resistance to a disease. A person raised in a germ free environment as in the case of supportive therapy, would appear very healthy but would be highly vulnerable to a viral attack. To examine the effects of supportive therapy vs.



an inoculation approach a scientist would ideally want to study individuals who were raised in a germ free environment. Since McGuire wanted his analogy to be of heuristic value towards developing a theory of resistance to persuasion he chose to deal with beliefs that people held in a "germ free environment," beliefs that were held with great conviction, but also beliefs that his subjects had not heard attacked before. An individual would not have been motivated to defend, or have had practice in defending a belief of this type.

After much testing, one area was found in which people almost universally held a belief that they had not heard attacked before. Upwards of 75% of the student population tested checked "15" on a 15 point scale to indicate their complete agreement with the following health based cultural truisms (McGuire and Papageorgis, 1961).

- (1) It is a good idea to brush your teeth after every meal.
- (2) Mental illness is not contagious.
- (3) The effects of penicillin have been, almost without exception, of great benefit to mankind.
- (4) Everyone should get a yearly chest x-ray to detect any signs of TB at an early stage.

In order to operationalize the biological analogy McGuire initially developed two message types, refutational same and supportive. Refutational same, referred to as RS in the remainder of this paper, is defined as a defensive message that

mentions and refutes a weakened form of the same arguments that the attacking message contains. A supportive message, hereafter referred to as Sup., is defined as a defensive message that provides only belief bolstering material. This is analogous to Hovland et al's. one sided message. McGuire also developed a third type of defensive message. This defense type consists of mentioning and refuting a weakened form of arguments pertaining to but not identical to the arguments presented in the attack message. McGuire labeled this third defense type refutational different (RD). This defense strategy appears to depart from the biological analogy. Just as a doctor would not give a patient an inoculation for Asian Flu if he had Russian Flu, one would not expect an RD message to provide resistance to persuasion if a strict view of the biological analogy were taken. This point will become important in the analysis and interpretation of the current findings. McGuire believes that to render "cultural truisms" resistant to attitude change, two obstacles must be overcome. First, the subject is not motivated to defend his belief because he perceives no threat or possibility of it being attacked. Secondly, he is unpracticed in defending his belief. Therefore, to successfully inoculate an individual, McGuire reasoned that the subjects must be made aware of the vulnerability of their belief. By providing a threat to that

belief the subject would be motivated to defend it. McGuire suggests that this motivation alone is not enough to provide resistance since an individual may not have available any defensive material with which to refute an attack. Thus, some amount of guidance, and/or time is needed to aid in the development of such belief bolstering material. This guidance was provided by the use of the messages previously discussed. The relationship between the underlying assumptions (threat/motivation, material and practice) of inoculation theory and the three defense types is illustrated in Table 1.

Table 1  
The Relationship Between Defense Type and  
Motivation, Practice and Material

Defense Type	Threat/ Motivation	Material	Practice
Sup.	No Threat, No Motivation	Belabors Obvious Issues	No Practice in Defending Belief
RS	Threat Hence Motivation	Issue Relevant Information	Issue Relevant Practice in Defending Belief
RD	Threat Hence Motivation	Issue Related Information	Issue Related Practice in Defending Belief

As shown in Table 1, the Sup. message provides no motivation or new material to aid the receiver in defending his belief. The result should be no resistance to a subsequent attack against one's belief in a health truism.

The RS defense provides a threat by mentioning and refuting potential counterarguments. The refutations are of the exact counterarguments which later appear in the attack. Given the high level of motivation and the relevance of the material, the RS defense affords receivers effective practice in defending their beliefs against counterarguments. Thus, McGuire theorized that resistance to persuasion should result from exposure to an RS defense.

The RD defense provides one with a high level of motivation and related material. Since the RD defense refutes arguments which are related, but not identical to the attacking arguments, the material and practice should provide less resistance to persuasion than the RS defense. McGuire argues, as will be discussed later, that the lack of issue relevant material and hence less effective practice afforded by the RD defense can be compensated for by a delay between exposure to the defense and attack messages. He reasoned that issue relevant material would be gathered by the receiver given the high level of threat/motivation provided by the RD defense.

The procedure which McGuire used to develop and test this resistance to attitude change paradigm was basically the same

for each of seven experiments. Each experiment involved two parts; the first devoted to defenses; the second devoted to the attack conditions. The interval between defense and attack varied from a matter of minutes (contiguous) to two or seven days. Attitude change was measured by use of post-test only designs with various control groups. Subjects for his experiments were drawn from college students in introductory psychology classes who were required to participate in at least one experiment. The cover used was generally that of an analytical thinking test concentrating on verbal skills. As discussed, the issues being defended and attacked were cultural truisms.

Each subject would first participate in several defense conditions. For example, he may have been in an active-refutational, active-supportive, and a passive-supportive defense each dealing with a different truism. An active refutational defense consisted of a sheet of paper on which a truism was listed. This was followed by a one sentence argument against that truism and finally a space provided to write arguments refuting the attack. Part way down the page another truism would be listed with an argument against it and a space for supporting arguments. The subject would then be asked to write arguments in line with the truism. In the passive conditions, subjects merely read and underlined the crucial clauses in the defense messages. The attack session

involved reading and underlining the most crucial clause in the attacking message. Each message consisted of three paragraphs. Upon the completion of several attack conditions subjects filled out an attitude post-test based on a 15-point scale which ranged from 0, complete rejection of the truism, to 15, complete acceptance. This paradigm was developed to explore the effects of certain variables within the framework of inoculation theory.

The three defense types (RS, RD and Sup.) will be reviewed first. McGuire and Papageorgis (1961) measured the relative inoculating power of RS and Sup. defenses using a two day delay between defense and attack conditions. Subjects were assigned to active and passive treatments; a variable to be discussed later.

In the attack only condition the mean belief was reduced to 6.64 from the initial control level of 12.62. When the RS defense preceded the attack the mean belief level was reduced to 10.22 by the attacking message. This is significantly above the attack only condition ( $p < .001$ ) hence the RS defense conferred at least partial resistance to the subsequent counterattitudinal attack. The Sup. defenses produced a final belief level of 7.39; significantly lower than 10.22 (RS) and not significantly above the attack only level (6.64). Sup. defenses conferred no resistance to persuasion in this experiment.

Theoretically the RS defense provided subjects with both the motivation to find ways to defend their beliefs and material to use in such a defense.

The Sup. defense provided subjects with no motivation to defend their beliefs. Without motivation the belief bolstering material was not internalized by the subjects, leaving their beliefs vulnerable to the subsequent attack.

McGuire (1961a), using a one week delay between defense and attack conditions, examined the effects of passive RS and RD defenses. McGuire theorized that an RD defense would be an effective immunizer for two reasons. First, the fact that arguments against the truisms were mentioned and refuted should generalize, thereby decreasing the impressiveness of any arguments presented on that topic in the attack session. Secondly, the realization that their beliefs were vulnerable should motivate the subjects, given the time, to seek out issue relevant information.

In the attack only condition beliefs were reduced from an initial mean level of 13.23 to 5.73 ( $p < .001$ ). When subjects were given a defensive treatment prior to the attack belief levels decreased to 9.25 (RS) and 8.70 (RD). Both means were significantly above the 5.73 belief level observed in the attack only condition and the effects of the two defenses did not differ significantly from one another. The latter findings at

first appear to be inconsistent with inoculation theory. The RS defense should have conferred more resistance due to its superior material and practice. McGuire's explanation for this difference involves the one week interval between defense and attack sessions. McGuire believes that this delay allows a motivated individual to gather his own material to defend his belief. It also allows the immunizing information given in the RS defense to be forgotten over time, rendering it less useful than if defense and attack were immediately contiguous.

To test the rationale for the effectiveness of the RD defense subjects were also given a 10 item questionnaire. They rated the credibility of the arguments presented in the attack message on a 7-point scale, one being least credible and seven indicating maximum credibility. With a maximum rating of 70 (10 items X 7-point scale) the mean rating for those subjects in the attack only condition was 53.69. Subjects mean credibility rating in the RS condition was 45.20, while subjects in the RD condition produced a mean credibility rating of 46.52. There is no significant difference between the ratings of credibility for the two defense types (RS and RD). A comparison of the credibility ratings for both RS and RD, however, reveals that they do differ significantly ( $p < .01$ ) from the attack only condition. These results indicate that both



refutational defenses derive their effectiveness partially from lowering subjects evaluations of the attacking messages. Thus a refutational defense need not deal with the exact arguments used in the attack to produce resistance to that attack.

McGuire also attempted to measure the power of the motivating mechanism of refutational defenses. Subjects recorded arguments refuting the attacking message on a separate questionnaire. McGuire noted a trend ( $p < .20$ ) for an increase in the number of arguments derived by subjects on their own when exposed to an immunizing refutational defense. One final measure tested the relative quality of the arguments subjects had developed to refute the attacking message for the refutational defenses. A trend was noted for the arguments in the refutational conditions to be judged of superior quality, 3.19 (one being inferior to five superior), as compared to the attack only control (3.01). The validity of this test is questionable. The judges chosen to rate the quality of arguments were high school teachers with no training in judging an arguments overall quality. This questionable test and the nonsignificant directional findings leave the question concerning the RD defense's affect on the quality and quantity of arguments subjects derive on their own unanswered.

McGuire (1964a) tested the inoculating strength of passive RS and RD defenses. With no delay between the defense and

attack conditions the attack only decreased the mean belief level of subjects from 12.54 to 10.47. While the persuasive effect of the attack was statistically significant, the reduction from the control level was much less than in McGuire's other experiments.

As expected, subjects exposed to the Sup. defense showed no resistance to the subsequent counterattitudinal attacking message. Their mean belief level was decreased to 10.32 as compared to the attack only condition (10.47). The small difference between the attack only and the no message control condition rendered the levels of resistance conferred by RS and RD defenses nonsignificant. The results were, however, in the expected direction. The RD defense reduced the effectiveness of the attack by 30% (11.10) while the RS defense provided a 60% reduction in the effectiveness of the attack (11.82). The RS defense provided significantly more resistance than the RD defense ( $p < .05$ ).

Again this finding can be explained by the lack of time between defense and attack treatments. Since the RS defense contains direct refutations of the attacking arguments, subjects were immediately equipped with ways to defend their beliefs.

A final result pertaining to the defense variables should be mentioned. McGuire and Papageorgis (1961) found the direct

strengthening effect in the defense only condition was greatest for the supportive defense (14.34).

The direct strengthening, but lack of immunizing efficacy of the sup. defense, is known as the "paper tiger" effect (McGuire, 1964, p. 212).

The differing effects rendered by active and passive defenses were examined in two of McGuire's experiments. In McGuire and Papageorgis (1961) the amounts of guided participation over four levels were manipulated; writing; guided writing; reading and underlining the crucial clauses; and simply reading the essay. A two day delay between defense and attack conditions was used. Due to the complexity of the findings, a table presenting the mean belief levels for defense only, attack only and defense-attack treatments is provided (Table 2).

McGuire and Papageorgis predicted that across the active (writing) conditions, the lack of defensive material would outweigh the increased motivational properties, rendering the writing conditions less effective as immunizers than the reading conditions. As expected the superiority of the reading condition (passive) over the writing condition (active) was significant ( $p < .001$ ). The reading condition also produced a greater direct strengthening effect ( $p < .01$ ). Directional support for the interaction effect of reading and writing conditions to the two defense types was found. The superiority

Table 2

Mean Belief Levels for Active vs.  
Passive Defensive Messages

	SUPPORTIVE	REFUTATIONAL SAME	SUPPORTIVE	REFUTATIONAL SAME
	Passive Underline	Passive Underline	No Outline	No Outline
DEFENSE ONLY	14.62	14.16	14.38	13.71
DEFENSE ATTACK TREATMENT	7.47	7.63	7.94	9.19
ATTACK ONLY	6.64			9.46

of reading over writing is greater with RS than with Sup. defenses in regard to both direct strengthening ( $P=.10$ ) and immunizing effect ( $P=.08$ ). Theoretically, the RS defense benefitted more from the added material in the reading condition than did the Sup. defense.

In another experiment dealing with active versus passive defenses McGuire (1964) hypothesized an interaction between refutational defense type and level of activity. He reasoned that the RS defense would provide the receiver with both motivation and highly relevant material. Theoretically an active operationalization of the RS defense would cause a loss of that valuable material. McGuire theorized that the RD defense derives its strength from the motivational component. In the passive condition the subject would be motivated while also receiving material which he believes answers the arguments against the truism. In the active condition the subject would not receive the information, leaving him with arguments from the attack with no answers provided by the defense. Given sufficient time his motivation would be greater to seek out the material thereby gaining more relevant information; hence a more resistant belief would be formed.

Results supported this hypothesis. In the RS condition, the passive defense was found superior to the active defense ( $P<.05$ ) while for RD, the active defense was found to be superior ( $P<.13$ ).

The interaction effect was highly significant ( $P < .02$ ).

McGuire also predicted that an active plus passive defense would increase the effectiveness of an RS more than an RD defense. McGuire reasoned that the RS defense would receive enhanced motivation and practice from the active defense and issue relevant material from the passive defense. The RD defense however, would receive motivation and practice from the active defense and only issue related material from the passive condition. This prediction was supported. The active plus passive defense strengthened the RS more than the RD defense ( $P < .01$ ).

The importance of time as a variable was suggested by findings in two of McGuire's experiments. McGuire (1961a) found that a one week delay between defense and attack yielded no significant difference for the relative inoculation strength of an RS vs. an RD defense. However, McGuire and Papageorgis (1962) obtained significantly greater resistance from the RS defense than the RD defense when the attack followed immediately after the defense. Reasoning from these findings McGuire (1962) formed a number of predictions based upon the likely effects of time on each defense type. First, a delay between defense and attack was expected to be most detrimental to the Sup. defense. Since it provides no motivation to defend one's belief the supportive information would be quickly forgotten. McGuire theorized that

the RS defense gains its inoculating power from both relevant material and motivation. Over time the relevant material would be forgotten resulting in a negative relationship between time and immunizing strength for the RS defense. The RD defense however, gains its inoculating strength predominantly from motivation. Over time the subject would be motivated to gather their own issue relevant material resulting in a curvilinear relationship between time and the RD defense. That is the RD defense should gain inoculating power to the point in time where the newly acquired information begins to decay from memory.

As predicted, the small amount of resistance conferred by the Sup. defense completely decayed ( $P < .05$ ) within two days. At the seven day post-test the recipients of the Sup. defense had mean belief levels equal to the attack only level.

For the RS defense the conferred resistance decayed at a much slower rate. After a two day delay between defense and attack sessions the mean belief level for these subjects was 11.08, a nonsignificant drop of .26 from the initial belief level. At the seven day post-test the belief level for RS subjects had decreased significantly, as predicted, to 9.49. The predicted nonmonotonic effect in the RD condition was also confirmed. Resistance to attack after two days was greater ( $P < .05$ ) than it was in the immediate treatment.

The effects of forewarning on inoculation were studied by McGuire and Papageorgis (1962). Subjects were assigned to a forewarning or no forewarning condition; they received either an RS, RD or Sup. defense. McGuire and Papageorgis hypothesized that the additional threat provided by the forewarning would increase the strength of immunization across the three defense types. They further reasoned that forewarning would be more helpful in the Sup. condition, since the Sup. condition, which lacked the motivating component, had more to gain than an RS or RD defense.

As predicted, the final mean belief level in the forewarning treatment was 11.67; no forewarning, 10.93 ( $P < .05$ ). Further, the superiority of the forewarning treatment was completely due to its effects in the Sup. condition. These results clearly exemplify the importance of threat to producing resistance to persuasion.

Anderson and McGuire (1965) examined the effects of reassurance on the relative inoculating strength of RS, RD and Sup. defenses. The motivational mechanism of the RS and RD defenses overcame the variable of reassurance rendering both conditions equal in inoculating power for these defenses (RD, RS). The Sup. defense however, obtained significantly less ( $P < .02$ ) inoculating effect when preceded by extrinsic reassurance. Apparently, reassurance, in the case of the Sup. defense, left



subjects overconfident and totally unprepared for an attack on their belief. In McGuire (1964a) using RS defenses, the variable of reassurance was also examined. Four levels of reassurance and high and low threat, were manipulated. The high threat treatments conferred significantly more resistance than low threat treatments ( $P < .01$ ). Surprisingly, however, high reassurance proved superior to low reassurance in resistance conferral. McGuire explains:

. . . that reassurance promoted resistance is not necessarily in conflict with inoculation theory. The experimenter's conjecture is that if the reassurance comes before the threat, the believer's confidence in the truism is increased and his tendency not to head the defense is augmented. If on the other hand, the reassurance comes after the threat has already stimulated the believer's motivation to assimilate defense, then it will heighten resistance to attack (1964, p. 214).

Since the latter was true in this experiment, McGuire's explanation is consistent with a previous hypothesis regarding sequence effects (1961b) which predicted a greater conferral of resistance to a subsequent counter-attitudinal attack by a refutational-supportive defense sequence (threat followed by reassurance) than the opposite order. In this experiment McGuire further examined the relative effects of a sup. defense when combined with an RS or RD defense.

In regard to the order effects, no support was found in McGuire (1961b). The contiguous presentation of defense and

attack sessions may account for these findings. If the Sup. defense is given seconds before the refutational defense, the material (reassurance) will still be fresh in the subject's mind. If, on the other hand, a two day delay between the two defenses (Sup. - Ref.) was used, the information contained in the Sup. defense would decay. When the threat-producing refutational defense was given to the subjects they would not be able to totally recall the material from the Sup. defense. The result should then be that the refutational - supportive order is more effective in conferring resistance to persuasion than a supportive - refutational order, given a sufficient delay between the two defenses.

McGuire found that as predicted, the RD defense was helped by the Sup. defense more than the RS defense. The RD defense gained more from the Sup. defense in terms of motivation because of its lack of relevant material. The mean belief level for RD was 9.96, for RS was 12.16. With the addition of a Sup. defense the RD increased to 11.25 while RS - Sup. combination produced a mean belief level of 11.51.

This review of McGuire's pioneering research on conferring resistance to persuasion exemplifies the importance of threat/motivation and material in the inoculation paradigm. Prior

and Steinfatt (1978) endeavored to expand the scope of McGuire's "Inoculation Theory" by examining inoculation theory predictions in the context of issues which varied across three levels of initial acceptance. They also extended McGuire's biological analogy to explain their predictions. Pryor and Steinfatt felt that culturally pure beliefs were not a prerequisite for the resistance to persuasion paradigm to function.

If a person has had chicken-pox, it does not render an inoculation for measles unnecessary. In the biological sense, the fact that an inoculation is more effective than supportive therapy is not due to the organism being raised in a germ-free environment but only that at "that" time the organism is free from "that" particular attacking virus. In the communication sense then, Pryor and Steinfatt believe that the entire belief does not have to be free from all attacks. These authors argue that while the attacking message must be unfamiliar to an individual, it is not necessary that the individual has never previously heard the belief attacked.

Pryor and Steinfatt pretested and developed messages on beliefs varying in initial acceptance. Using a 15-point scale, 0 being complete rejection, 15 being complete acceptance, the following operational definitions of belief levels were made: 7.00 to 9.00 - low-range belief; 9.01 to 12.00 - mid-range belief; 12.01 to 15 - high-range belief. This experiment

manipulated three independent variables; belief level (3), defense type (3) and time (2), in a 3X3X2 design. The three defense types were RS, RD, and Sup. while the time variable involved either no delay or a seven day delay between defense and attack sessions. McGuire's experimental method discussed previously was replicated.

Pryor and Steinfatt made no predictions concerning the high-range beliefs since they expected to replicate McGuire's findings. The authors chose not to make any predictions concerning the low-range beliefs being slightly counterattitudinal or neutral, previous research on resistance to persuasion provided no basis for prediction. For beliefs defined as mid-range however, predictions were tendered.

The authors theorized that while one would not expect subjects to become highly motivated to defend a belief which they only held in the mid-range level, the material should not appear as belaboring the obvious. Thus, one would expect subjects to acquire a moderate amount of knowledge from a Sup. message. In terms of motivation, a potential attack on a belief held as probably true would not generate as much threat/motivation as the potential attack on a truism. The major strength then of a refutational defense (motivation) would be lessened for mid-range beliefs. Taken together, these considerations implied that the superiority of a refutational defense over the Sup.

defense would be less for mid-range than for high-range beliefs. Thus, they predicted that while the refutational defenses would be superior in inoculating power to the Sup. defense, their superiority would not be as great as in the case of high-range beliefs.

By examining previous research as to the effect of time (McGuire, 1962; McGuire and Papageorgis, 1961), Pryor and Steinfatt felt that the differences between high and mid-range beliefs were not pronounced enough to warrant differing predictions. Accordingly, they hypothesized that: resistance to attack conferred by a Sup. defense would decrease appreciably over time; resistance supplied by an RS defense would also show a significant reduction over time; the RD defense would not lose inoculating strength over the one week time interval. The predictions involving the relative inoculating power of the refutational vs. the Sup. defense as a function of initial belief level were not supported. While the Sup. defense did produce resistance to attacks against mid-range beliefs, the Sup. defense unexpectedly proved to be equally effective against attacks upon high-range beliefs.

The second group of predictions concerning the effects of time on the three defenses received partial support. As expected, the RS defense lost inoculating strength over time, while the RD defense held complete inoculating effects through

the seven day delayed post test. The prediction that the Sup. defense would decrease in immunizing effects over time was not supported.

The results for the high-range beliefs did not replicate McGuire's work. All three defense types (RS, RD, Sup.) provided complete resistance to the attacks. Pryor (1972) theorized that these high-range beliefs were no longer truisms. He suggested that subjects were more familiar with both pro and con arguments including these issues. The mechanism of motivation would be contained in the belief type rendering the material in each defense type as useful. This should serve to equalize the inoculating strength of the defense types.

In the case of low-range beliefs the RS defense rendered subjects resistant to the attacks in both the immediate and delayed conditions. The RD defense provided resistance in the immediate condition only and the Sup. defense was ineffective across all treatments for the low-range beliefs.

The present experiment was designed to compare the effects of belief level (high and mid-range), double defense order (RS-Sup. or Sup.-RS), and time (immediate or two days delay between defenses) on resistance to persuasion.

By pilot testing McGuire's original belief types, support was found for Pryor and Steinfatt's (1978) contention that these beliefs were no longer truisms. McGuire (Papageorgis, 1961)

found that up to 75% of the students tested checked "15" on a 15-point scale to indicate their complete agreement with the truisms. In the present test of the 80 scales completed, only 20 were marked as "15" (25%). Of those 20, only two of the subjects marked "15" on each of the four scales they completed (10%). Clearly the belief (toothbrushing) used in this experiment is no longer a truism.

Operating from the standpoint that McGuire's messages are no longer high-range truisms, the relationship between motivation and material in this experiment should replicate Pryor and Steinfatt's findings. The motivation to defend this type of belief (high-range, solidly founded) is made inherent in the belief itself because subjects are more familiar with arguments for and against it. Although these issues remain relatively high in strength of belief, they are no longer taken for granted. With a moderate level of motivation across defense types the material contained in each message will be useful in the defense of the belief. Considering the effects of time on these high-range beliefs as noted by Pryor and Steinfatt, the long-range effectiveness of the motivational mechanism for the RS and Sup. defense are equal. These findings lead one to the following prediction:

$H_1$ : For beliefs generating a high level of acceptance; defensive order (RS-Sup. or Sup.-RS) will not affect the inoculating strength of double defenses in the immediate or delayed treatments.

Applying Pryor and Steinfatt's findings on mid-range beliefs, the following theoretical application is possible. The finding that the Sup. defense provided the same level of resistance as the RS defense suggests that both defense types have strong motivational properties. Over time Pryor found that the RS defense lost some of its inoculating effectiveness. However, since in the present experiment the delay between defenses is two days rather than the seven day delay Pryor used, it is anticipated that the decaying effect of the RS defense will not be significant. Accordingly, the second hypothesis is as follows:

$H_2$ : For beliefs generating mid-range acceptance; defensive order will not affect the inoculating strength of double defenses for the immediate or delayed treatments.

Considering the effectiveness of the motivational mechanism for the high and mid-range beliefs in this experiment, this author expects each defense type to provide some level of resistance to persuasion in each treatment.



## METHOD

### Subjects

The subjects participating in this experiment were 120 students enrolled in Introductory Speech, Economics and Geology courses in the Spring quarter of 1978. Twenty subjects were drawn from Florida Technological University, while 100 subjects were chosen from Valencia Community College.

Eight intact classes ranging in size from 9 to 27 students were used to complete the data collection. Five classes were randomly assigned to the delayed treatment (60 S's) and three classes were randomly assigned to the no delay treatment (60 S's). All conditions within the immediate and delayed groups were administered simultaneously in each class. Subjects enrolled in more than one of the classes being tested were allowed to participate in only one of the sessions.

### Design

This experiment involved three independent variables: belief level, defense order, and time, in a 2 X 2 X 2 design as outlined on Table 3.

Table 3  
Defense and Attack Types for Two Belief Levels

Defense 1	Defense 2	
Sup.	RS immediate	Immediate
RS	Sup. immediate	Immediate
Sup.	RS delay	Delay
RS	Sup. delay	Delay
NONE	NONE immediate	Attack same (control)
NONE	NONE delay	Attack same (control)
NONE	NONE delay	NONE (control)
NONE	NONE immediate	NONE (control)

As indicated in Table 3, Sup.-RS and RS-Sup. double defense orders were tested in both immediate and two day delay conditions using high and mid-range beliefs. Each intact class also yielded data indicating the initial mean belief level, as well as the effects of attacks without defenses for both belief levels. The initial belief levels were used as a point of reference from which to assess the impact of all independent variables. Fifteen subjects participated in each condition.

### Materials

Subjects were given booklets which contained four sections. There were five different booklets representing four conditions for both the delayed and immediate double defense treatments; two booklets represented the attack only condition. The topic chosen to represent the mid-range belief was the large number of traffic accidents attributable to vehicle failure. For the high-range belief, the selected issue was the desirability of brushing ones teeth after every meal. The conditions operationalized in the booklets are shown in Table 4.

Table 4  
Experimental Conditions as Operationalized  
In Booklet Form

Booklet	Session #1	Session #2	Attack	Attitude Measure
1)	Sup 1-RS2 Delay	RS1-Sup 2	$A_1 A_2$	X
2)	RS1-Sup 2 Delay	Sup 1-RS2	$A_1 A_2$	X
3)	Sup 1-RS2 No Delay	RS1-Sup 2	$A_1 A_2$	X
4)	RS1-Sup 2 No Delay	Sup 1-RS2	$A_1 A_2$	X
-Above are the Treatment Groups				
5)	Sup 3-RS4 Delay	RS3-Sup 4	$A_1 A_2$	X
6)	RS3-Sup 4 Delay	Sup 3-RS4	$A_1 A_2$	X
7)	Sup 3-RS4 No Delay	RS3-Sup 4	$A_1 A_2$	X
8)	RS3-Sup 4 No Delay	Sup 3-RS4	$A_1 A_1$	X
-Above (5-8) are Attack Only Controls				
9)	RS3-Sup 4 Delay	Sup 3-RS4	$A_3 A_4$	X
10)	RS3-Sup 4 No Delay	Sup 3-RS4	$A_3 A_4$	X
-Above (9-10) are Neither Nor Controls				

As indicated in Table 4, one series of treatments measured the effect that an immediate double defense has on the persuasiveness of an attacking message. A second group of

subjects received precisely the same booklets, however, a two day delay separated their reading of the double defenses.

Booklets one and three operationalized a Sup-RS defensive order for the mid-range belief and an RS-Sup defense order for the high-range belief. Booklets two and four represented an RS-Sup defensive order for the mid-range belief and a Sup-RS sequence for the high-range belief. The attacking messages for these four booklets were all RS attacks on the topics initiated by the preceding defensive messages. The attitude measure, as in all treatments, consisted of four questions on each of two treatment topics and two filler topics used in the control conditions. Subjects were asked to respond to each question by marking the accompanying 15-point scales.

Booklets 5-8 operationalized the attack only control groups for both the delay and no delay treatments. Subjects would receive double defenses as represented in booklets 1 and 3 or 2 and 4, however, filler essays were substituted for the defensive messages used in the treatment groups.

In booklets 9-10 filler essays and filler attacks were used to obtain a neither attack nor defense (initial belief level) control group.

In each control condition, Pryor and Steinfatt's mid-range belief messages on 'the high quality of Japanese imports' and McGuire's high-range belief messages on 'the great benefits

of penicillin to mankind' were used as the filler items.

A pretest was conducted to determine which topics would be used in the treatment conditions and which would be filler topics in the control conditions. Two mid-range beliefs, the high quality of Japanese imports and the large number of traffic accidents attributable to vehicle failures (Pryor, 1972) were pretested. Two criteria were examined; a small standard deviation was considered desirable and, secondly, the mid-range belief with the largest difference between the attack only and the initial belief level was sought. The topic dealing with vehicle failures best achieved these two criteria. It received an initial mean belief level of 8.69 with a standard deviation of .59 and an attack only belief of 4.9 ( $t = 4.18$ ,  $P < .01$ ,  $df = 29$ ). The topic concerning Japanese imports was chosen as the filler topic for mid-range beliefs.

Three high-range beliefs were also pretested to determine which would be used in the treatment conditions; (1) It is a good idea to brush your teeth after every meal; (2) The effects of penicillin have been, almost without exception, of great benefit to mankind; and (3) Everyone should get a yearly chest X-ray to detect signs of TB at an early stage (McGuire and Papageorgis, 1961).

Applying the same criteria as with the mid-range issues, tooth-brushing was chosen as the high-range belief to be used in

the treatment conditions. It received a mean belief level of 11.32 with a standard deviation of .59. The initial belief level was significantly above the mean of the attack-only group (5.5,  $t = 6.2$ ,  $P < .01$ ,  $df = 28$ ). The issue on penicillin was chosen as the filler topic.

The defensive essays, approximately 600 words in length, were developed by McGuire and Papageorgis (1961) and by Pryor (1972). The message construction is the same for both high and mid-range beliefs.

Sup. 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 RS defense consisted of a statement about an issue, initially followed by a paragraph containing two weak arguments, then by two paragraphs, each developing one of the arguments.

The RS attacking messages were used for both belief levels. This message was designed to significantly reduce the original belief level of the subjects when no defensive message was administered. These attacking messages consisted of three paragraphs. The first paragraph included two statements counter to the position advocated by the defensive message, followed by two paragraphs, each developing one of the counter arguments.

McGuire's 15-point scale was used to measure belief levels. Each questionnaire consisted of 16 items, 4 for each of two filler topics and two treatment topics. McGuire's questions on high-range beliefs as well as Pryor's questions dealing with mid-range beliefs, were replicated.

For Example:

The benefits to mankind from using penicillin have far outweighed any disadvantages.

1 /	2 /	3 /	4 /	5 /	6 /	7 /	8 /	9 /	10 /	11 /	12 /	13 /	14 /	15 /
Definitely	Probably		Uncertain		Probably	Definitely								
false	false				true	true								

The best way to prevent tooth decay is to brush one's teeth frequently.

1 /	2 /	3 /	4 /	5 /	6 /	7 /	8 /	9 /	10 /	11 /	12 /	13 /	14 /	15 /
Definitely	Probably		Uncertain		Probably	Definitely								
false	false				true	true								

### Administration

Treatment 1 no delay: Booklets representing each experimental condition were randomly distributed to each class. Subjects were asked to read the following instructions silently while the experimenter read them aloud.

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. The Speech (Economics or Science) department



agreed to assist in evaluating the validity of the test. Consequently, we are asking speech 100 students to help us. 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 in each paragraph. You will be given three (3) 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.

After subjects had finished the six essays in their booklet they were asked to complete the 16 item attitude questionnaire. There was a three minute time limit for the latter section.

Treatment 2, delay: Administration for the delay and no delay treatments were identical except for the delay between the double defenses.

Subjects in both treatments were asked to put some identifying mark on their booklets so they could recognize them upon my return.

All subjects were debriefed after the completion of their experimental treatments.

### Data Analysis

A 2 X 2 X 2 analysis of variance was used to examine the effects of belief level, order effects, time and interactions. Two tailed t tests were used when comparisons of individual means were necessary. The .30 level was selected as the appropriate significance ratio for the null predictions.

## RESULTS

The mean belief levels produced by each treatment form the data of this study. These levels are summarized in Table 5.

Table 5  
Mean Belief Levels Produced By All Treatments

Condition				
Sup.-RS - Imm.	9.70 <sup>ab</sup>	(4.42) <sup>c</sup>	7.23	(2.12)
Sup.-RS - Delay	9.40	(2.10)	6.48	(2.11)
RS-Sup. - Imm.	8.99	(1.79)	9.38	(2.31)
RS-Sup. - Delay	8.60	(1.48)	9.32	(2.23)
Attack Only - Imm.	6.42	(4.18)	4.21	(2.59)
Attack Only - Delay	5.98	(3.27)	4.58	(2.04)
No def. or Attack - Imm.	11.00	(2.17)	7.94	(2.38)
No def. or Attack - Delay	10.58	(1.54)	6.98	(2.40)

<sup>a</sup>15.00 equals complete agreement

<sup>b</sup>n=15 for all cells

<sup>c</sup>Numbers in parentheses are standard deviations

In order to examine the resistance conferring properties of various defense-attack conditions it is first necessary that the attacking messages significantly reduce the initial belief level of the subjects. As shown in Table 5, the attack only (hereafter referred to as A0) level for the high-range belief was 6.42 in the immediate condition and 5.98 in the delayed treatment ( $t = 40$ ). The initial mean belief level for high-range issues was 11.00 in the immediate condition, and 10.58 in the delayed treatment. A comparison of initial belief levels (hereafter referred to as control) with their corresponding A0 levels show that for both the immediate and delayed conditions the attacks significantly reduced subjects initial belief levels (Imm.  $t = 4.5$ ,  $P < .005$ ,  $df = 28$ ; Delay  $t = 4.9$ ,  $P < .005$ ,  $df = 28$ ). For beliefs of mid-range acceptance the A0 level in the immediate condition was 4.21 while the delayed A0 level was 4.53 ( $t = .52$ ). A comparison of control and A0 levels for the mid-range belief shows a significant difference in both the delay ( $t = 3.0$ ,  $P < .01$ ,  $df = 28$ ) and no delay ( $t = 5.1$ ,  $P < .005$ ,  $df = 28$ ) treatments. The attack for both belief types across all treatments significantly reduced subject's initial belief levels, making it useful to analyze the inoculating power of each treatment condition.

The definition of resistance to persuasion used to analyze this data is taken partially from Pryor and Steinfatt (1978).

"Resistance ( $R_1$ ) occurs when the defense-attack belief level is significantly above the attack only level and not significantly below the no-defense-no-attack level" (control). "Type 2 Resistance ( $R_2$ ) occurs when the defense is significantly above the attack only level, but is also significantly below the no-defense-no-attack level. Thus, a defense with  $R_1$  effectiveness produces a belief which is on the same level of acceptance after an attack as it was before the attack. A defense with  $R_2$  effectiveness produces a belief with higher acceptance after attack than a naked, undefended belief, but with less acceptance than the belief had before the attack" (p. 5).

Table 6 presents data indicating the type of resistance provided by each treatment group. All comparisons were made with two-tailed t tests.

Table 6  
Analysis of Type One and Type Two Resistance  
For All Treatments

<u>Belief Level</u>			<u>Treatment 1</u>			
DELAY						
RS-SUP.			SUP.-RS			
<u>A0</u>	<u>Res. Type</u>	<u>Cont</u>	<u>A0</u>	<u>Res. Type</u>	<u>Cont</u>	
High	$t=2.33^{**}$	$R_2$	$t=3.60^{**}$	$t=3.41^{**}$	$R_2$	$t=1.761^*$
Mid	$t=6.06^{**}$	$R_1$	$t=2.76^{**}$	$t=2.51^*$	$R_1$	$t=.607$
<u>Belief Level</u>			<u>Treatment 2</u>			
NO DELAY						
RS-SUP.			SUP.-RS			
<u>A0</u>	<u>Res. Type</u>	<u>Cont</u>	<u>A0</u>	<u>Res. Type</u>	<u>Cont</u>	
High	$t=5.53^{**}$	$R_2$	$t=4.35^{**}$	$t=5.35^{**}$	$R_1$	$t=1.14$
Mid	$t=5.54^{**}$	$R_1$	$t=1.99^*$	$t=3.96^{**}$	$R_1$	$t=1.07$
*.05 level of confidence						
**.01 level of confidence						

As indicated in Table 6 the high-range belief, an RS-Sup. defense order provided type 2 resistance in both the delayed and immediate treatments, while the Sup.-RS defense order (high-range) provided type 2 resistance in the delayed condition and type 1 resistance for the immediate treatment. For the mid-

range belief the RS-Sup. double defense provided a very strong type 1 resistance. In both the delayed and immediate treatment, belief levels after the defense-attack sequence were actually significantly above the attack only and control levels. The Sup.-RS defense order (mid-range) gained type 1 resistance in both the immediate and delayed treatments.

In order to test the hypotheses an analysis of variance was used to examine main effects and interactions of the three independent variables; belief level; time; and defense order. The results are reported in Table 7.

Table 7  
Main and Interaction Effects of Belief Level,  
Time and Defense Order

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	60.692	3	20.231	4.035	0.00
BLF	33.214	1	33.214	6.625	0.011
TME	3.826	1	3.826	0.763	0.384
ORD	22.706	1	22.706	4.529	0.036
2-Way Interactions	79.252	3	26.417	5.269	0.002
BLF      TME	0.040	1	0.040	0.008	0.929
BLF      ORD	78.620	1	78.620	15.681	0.000
TME      ORD	0.586	1	0.586	0.117	0.733
3-Way Interactions	1.030	1	1.030	0.205	0.651
BLF   TME   ORD	1.030	1	1.030	0.205	0.651
Explained	140.975	7	20.139	4.017	0.001
Residual	551.505	110	5.014		
Total	692.479	117	5.919		

Significant main effects were noted for the variables of belief ( $F = 6.63$ ,  $P = .01$ ) and order ( $F = 4.53$ ,  $P = .04$ ) but



not for time ( $F = .764, P = .39$ ). A test of individual means revealed that no significant difference existed between the delayed and immediate conditions in any treatment, AO or control condition. The variable of time did not produce significant main or interaction effects.

The variables of belief type and order interacted with each other at a statistically significant level ( $F = 15.681, P = .001, df 1$ ). This interaction consisted of a trend indicating that the Sup.-RS defensive order was a superior inoculator for the high-range belief while the RS-Sup. order clearly provided superior resistance for the mid-range issue. Further contrasts using two tailed  $t$  tests between defense orders showed a non-significant difference for the high-range belief in both the delayed and immediate ( $t = .922, t = 1.21$ ) treatments. An examination of the means for the mid-range belief illustrated the superiority of the RS-Sup. order as an inoculating agent (Delay,  $t = 3.6, P < .005, df 28$ ; Immediate,  $t = 2.2, P < .025, df 28$ ). As previously mentioned, the RS-Sup. defensive order was so powerful it produced a final belief level which was significantly above the initial control level.

These results failed to support either null prediction. Hypotheses 1 predicted that for belief generating high-range acceptance the variables of time and defense order would have no significant effect on resistance to persuasion. In light of the

highly significant interaction between belief level and defensive order, the first hypothesis must be rejected. Since a trend for the superiority of the Sup.-RS order was obtained, one cannot reject the possibility that defense order is relevant to the effect of high-range defenses.

Hypothesis 2 predicted the same null hypothesis for those beliefs generating mid-range acceptance. This hypothesis is clearly rejected. The RS-Sup. defensive order was a far superior inoculating agent in both the delayed and immediate treatments.

The superiority of an RS-Sup. defensive order when using mid-range beliefs as well as the remaining findings are discussed in the next section.

## DISCUSSION

### Mid-Range Belief

Considering the clear superiority of the RS-Sup. defensive order in conferring resistance to attack, hypothesis two must be rejected. An examination of the operational definition of the mid-range belief will clarify these results. The mid-range belief when defined by Pryor and Steinfatt (1978) had an initial mean belief level ranging from 9.01 - 12.00 (uncertain - probably true). When operationalized in this experiment the mid-range belief produced a mean ( $\bar{X} = 7.46$ ) which fell into the "uncertain" category on the 15-point scales. This belief fits the definition of a low-range belief as defined by Pryor and Steinfatt; 7.01 - 9, uncertain. Interpreting these results in terms of a low-range belief renders these findings consonant to previous research.

Pryor and Steinfatt (1978) gathered results for their low-range beliefs which explain the present experimental findings. For beliefs generating low-range acceptance the RS defense produced type 1 resistance in both the immediate and delayed treatment: the RD defense gained type 1 resistance in the immediate treatment: while the Sup. defense was ineffective in both the immediate and delayed conditions. Clearly, the refutational defense (two-sided) and specifically the RS defense

was superior to the Sup. defense in inoculating efficacy.

It should be noted that the findings for low-range beliefs in the above-mentioned experiments closely parallels the findings for high-range truisms. This is because subjects, whether exposed to a high-range truism or a low-range belief, find themselves in much the same cognitive state regarding motivation and material.

In the case of truisms, subjects are so sure of their belief that when they read a Sup. message they are not motivated (threatened) to internalize the supportive material. Thus, when the attacking message is read their belief is vulnerable to change.

Subjects exposed to communications to which they are neutrally or slightly unfavorably disposed are also unmotivated to internalize the obvious, "old hat" material in the Sup. defense.

This low-range belief also mirrors McGuire's truisms in another area: both belief types are not solidly founded. That is, subjects do not have the knowledge of both pro and con arguments with which to form and defend their belief. If a belief was solidly founded one would not expect an attacking or defending message to significantly alter a persons belief level. On the other hand, if a belief is not well founded the attack only condition should reflect a highly significant reduction in a persons belief level.

In McGuire and Papageorgis (1961) a control mean of 12.62 and

an AO mean of 6.64, a drop of 5.98, was reported. Papageorgis and McGuire (1961) obtained a control mean of 13.23 and an AO mean of 5.73, a decrease of 7.50. Thus we can conclude that these truisms were not solidly founded beliefs. In the present experiment the control mean was 7.46 and the AO mean was 4.40, a drop of 3.6 ( $t = 4.0, P < .005$ ). This highly significant reduction in the present experiment indicates that this low-range belief was also not solidly founded.

Thus, the subjects who receive defenses of either truisms or low-range beliefs are placed in similar cognitive states regarding their motivation and knowledge concerning defense of the belief. A neutral subject reading a refutational message would be exposed to both pro and con arguments. Such a format should provide the subject with a level of motivation for two reasons: 1) since the topic is being rendered somewhat controversial in the message; 2) because the subject does not have knowledge of pro and con arguments. If the RS message was read first (RS-Sup. order) then the subjects would have been motivated to use the material provided by the subsequent Sup. message.

If, however, the Sup. defense was read first (Sup.-RS order) no controversy would be produced, hence the subjects would not be motivated to internalize the belief bolstering material from the Sup. defense. The material contained in the Sup. defense would thus decay from memory by the time the motivation producing

RS defense was read: either three minutes or two days later.

One would then predict that the RS-Sup order would be a superior inoculator because of the use of the material in the Sup. message. This is precisely what was found. The Sup.-RS defense did provide type 2 resistance however without the additional information provided by the Sup. defense it did not reach the powerful level of resistance conferred by the RS-Sup. order. This interpretation is parsimonious with the previous work discussed.

#### High-Range Belief

Hypothesis one cannot be accepted because of a trend noted indicating that the Sup.-RS defensive sequence may have been superior in inoculating effect to the RS-Sup. order ( $t = 1.51$ ,  $P .2$ ,  $P .1$ ,  $df 29$ ). Although this trend could be accounted for simply in terms of experimental error, another plausible explanation is suggested by previous research. This explanation revolves around the possibility that the Sup. defense acted as a reassuring force when presented before the RS defense. Following a series of experiments (Anderson and McGuire, 1965, McGuire, 1964a), McGuire explained reassurance in terms of its placement: either before or after a threat to one's belief. McGuire reasoned that, in the case of a truism, if the reassurance (Sup. defense) is presented before the threat, the subject becomes overconfident in the unassailability of his belief. He is then

less likely to carefully attend to the information in any subsequent defensive message. If however, the reassurance is presented after the threat, it should not inhibit the acquisition of defensive material. Thus, the presentation of a reassurance before the threat would mitigate resistance while a reassurance following the threat would enhance resistance.

McGuire (1961b) applied this reasoning to explain expected sequence effects. He predicted greater immunizing efficacy for the refutational-Sup. defensive sequence (threat followed by reassurance) than for the opposite order.

To use this reasoning as an explanation for the present experimental results one must examine the control level that the high-range belief achieved. This belief actually fell into the upper middle range of the scales, producing a control mean of 10.59. The effects of lowering the control level from a 13.01 - 15.00 truism to a 9.01 - 12.00 mid-range belief were explained by Pryor and Steinfatt (1978):

McGuire explained the ineffectiveness of the supportive defense primarily in terms of the lack of threat . . . While we would not expect subjects to become highly motivated to defend a belief which they held only in the mid-range of the scales, the material should not be perceived as quite so obvious. Thus, we would expect the subjects to acquire a moderate amount of knowledge from the mid-range supportive material . . . Since the mid-range beliefs in this study are neither extremely adhered to nor controversial, the sudden realization that the belief is assailable is less likely to arouse strong motivation to build defenses for these mid-range beliefs.

This reduction in threat would decrease the effectiveness of the RS defense. As Pryor and Steinfatt found these two factors equalize the inoculating effect of the Sup. and RS defense for a mid-range belief.

If one defines the Sup. defense used in the present experiment as a type of reassurance, a reasonable explanation for the results can be advanced. Since subjects are aware that the issue is controvertible, the mentioning of possible counter-arguments in the RS defense could serve to decrease the effectiveness of the pro attitudinal information contained in the same defensive message. Support for this interpretation is available in McGuire's research (1961b). McGuire reported the same trend for the sequence effects. Specifically the Sup.-RS order yielded mean belief levels of 11.68 (RS) and 11.30 (RD); RS-Sup. produced a mean belief level of 11.35 (RS) and 11.19 (RD). Though not statistically significant, the Sup.-RS sequence consistently produced slightly superior mean belief levels.

### Conclusion

Several possible research projects are suggested by the present experiment. First, the use of a Sub. defense as a type of reassurance deserves further study.

The variable of belief solidarity needs to be more clearly



defined. A study examining beliefs ranging in levels of solidarity should further clarify the role of inoculation theory as a predictor of attitude change. It seems plausible to this author that how well founded a belief is, may be positively correlated to ego-involvement.

That is, a person who holds a solidly founded belief may do so because of their knowledge of pro and con arguments or because of their level of ego-involvement. A study which adapted the scale devised by Snyder (1977) would be useful in testing ego-involvement in a resistance to persuasion paradigm.

The effects of high, middle, and low-range counter-attitudinal beliefs also need examination. To this point only issues on the upper half of the 15-point scale, neutral to definitely true, have been used in an inoculation experiment.

In closing this research project, I feel that the role of motivation, practice, and material as predictors for resistance to persuasion have been solidly expanded into beliefs other than McGuire's truisms.

This expansion of inoculation theory into more real-life types of beliefs should be continued.

APPENDIX A

Experimental Messages

## Refutational Defense: High-Range Beliefs

### Some False Charges Against Tooth Brushing Practices

We are, no doubt, all aware that one should brush his teeth after every meal. Yet, from time to time, stories by well-intentioned but misguided reporters are published claiming that this healthful practice is unwise. Often these stories seem, on hasty examination, to be reasonable, but a closer look shows us that they are based on distortions of the facts and are misleading. While no one would claim that brushing one's teeth after every meal will positively prevent tooth decay, it is easy to demonstrate by scientific facts and figures that this practice does reduce the amount of decay and that the practice is in general a very important health measure. Because brushing one's teeth after every meal is so important, and because these distorted arguments against the practice may sometimes sound convincing on the basis of a brief reading, it will be useful to review here some of these misleading arguments against frequent tooth brushing and to show where their errors lie.

One of the misleading arguments is based on the erroneous claim that brushing the teeth tends to cause gum injuries and pushes the gums back exposing the more vulnerable part of the teeth to decay. As a matter of fact, brushing the teeth causes less damage to the gums than does eating itself. It would be as ridiculous to suggest that we should give up eating as that we should give up brushing our teeth because of the trivial amount of gum damage involved. In fact, in the long run, frequent brushing improves the health of the gums as well as that of the teeth. For example, bleeding of the gums is most commonly observed when the person brushes his teeth after a long period of neglect. Bleeding indicates weakness of the gums from lack of such stimulation as proper brushing gives them. It has been found in experiments that bleeding gums are less common in persons who brush after every meal than in those who fail to do so. The gums are among the strongest tissues of the body. The stimulating gum-massage involved in vigorous brushing after each meal has been shown to strengthen these gum tissues rather than weaken them.

Another misleading argument against tooth brushing is that tooth pastes contain harsh abrasives which pit the enamel of the teeth, leaving them open to bacterial damage. Such tooth pastes did indeed exist fifty years ago in this country, and are still used in some parts of the world, but all tooth pastes

now sold in this country are free from such defects. Since the advent of the Pure Food and Drug Act, all tooth pastes, before they are made available to the public, must be thoroughly tested and all abrasives (plus any other questionable contents) must be eliminated before the dentifrice is put on the market. By the time a tooth paste reaches the public in this country it has been thoroughly analyzed and tested and has been approved by both the United States Public Health Service and the American Dental Association as perfectly harmless for the public to use. It is important that such misleading arguments as those which we saw here do not cause us to neglect this simple and highly effective health practice of brushing our teeth after every meal.

/Supportive Defense: High-Range Belief/

Some Dangers of Excessive Tooth Brushing

Many people brush their teeth more or less automatically after each meal without realizing that of late, medical reports have been calling this procedure into question. Recent medical and biological studies indicate that the beneficial effects of constant tooth brushing have been exaggerated. Furthermore, it has been demonstrated that a number of bad effects can result from brushing teeth so often. In fact, statistical studies usually show higher rates of tooth decay among those brushing after every meal than those who seldom or never brush their teeth. Biochemical studies also indicate that most tooth decay occurs while the food is still in one's mouth, so that the brushing comes too late to do much good. Hence, medical authorities are beginning to urge that instead of brushing our teeth so frequently, we take other measures to improve dental health, such as a better diet. Let us review some of this evidence demonstrating that constant tooth brushing does not do any great amount of good and can do much harm.

It can be demonstrated by medical statistics, that constant tooth brushing after every meal can cause more harm than good as far as dental decay is concerned. Medical statistics show that groups who brush their teeth this frequently tend to suffer from the highest rate of tooth decay. For example, statistical studies show that the rate of tooth decay is higher in the high income, college educated segment of the population -- which does the greatest amount of tooth brushing -- than in the low income segment where this practice is more likely to be neglected. Also when we compare the rate of dental problems in various countries, we find an almost perfect relationship between the amount of dental troubles and the amount of tooth brushing. Tooth decay is a disease of the so-called hygienic tooth brushing and is relatively unknown in primitive societies where the tooth brush is unknown. Indeed, it can be shown that in a number of primitive societies that have been "Westernized" during the past half-century, the frequency of tooth decay has actually gone up after the practice of tooth brushing was adopted. Of course, not all the people who brush their teeth have dental troubles, but these statistics suggest that, on the whole, constant brushing does our teeth more harm than good.

Furthermore, it has been conclusively shown (Columbia Dental School, 1967) that almost all tooth decay occurs while the food is still in the mouth. By the time the meal is over and one has a chance to brush his teeth, it is already too late for the brushing to do much good. The decay producing activity of the bacteria depends on certain digestive enzymes which are liberated only while the food is actually in the mouth. Hence, when we stop eating and these enzymes are no longer secreted, the bacteria can no longer produce decay. Since we do not, of course, brush our teeth until after we have finished eating, this measure is, so to speak, like closing the barn door after the horse has already escaped. It would be wiser to utilize safer and more effective ways of preventing dental disease, such as a better diet or more frequent visits to the dentist. Since tooth brushing after every meal can do so little good and, as we have just seen, has so many harmful effects, it seems unwise to recommend this constant brushing as a general health measure.

/Attack-Same: High Range Belief/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.



/Refutational Defense: Mid-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 tire. 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.

/Supportive Defense: Mid-Range Belief/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.

/Attack-Same: Mid-Range Belief/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 serve to clarify the role of vehicular malfunctions in accident causation is the annual nation-

wide 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.

Refutational Defense: High-Range, Filler Essay

The Misguided Attacks on Penicillin

Medical researchers and physicians are generally agreed that the discovery and use of penicillin has been one of the greatest steps in the history of medicine's long fight against disease and death. It is particularly unfortunate, therefore, that the press has seen fit to print some well-intentioned but misguided stories which attack the use of this miracle of modern science. These stories have harped on the alleged dangers of penicillin when administered to "allergic" patients, or on the idea that penicillin causes the development of stronger breeds of bacteria. Since it is so important that we do not deprive ourselves of the unmatched benefits derived from penicillin treatment, it will pay us to look briefly at these unfortunate attacks on penicillin in order to see the fallacies involved in them.

One of the most distorted arguments against penicillin is that it has produced bad effects on some people who were allergic to penicillin. And while it is true that such detrimental effects have been produced upon allergic patients, it should be noted that such allergies are extremely rare. Further, these detrimental effects were produced in the days when penicillin was just beginning to be used by physicians, and it was not yet recognized that a few rare individuals were allergic to penicillin. Actually, a few people can always be found who are allergic to nearly any substance known. What critics of penicillin frequently fail to mention is that a simple test is available which detects penicillin allergy and, of course, penicillin is no longer given to people who are allergic to it. Initially, the allergy danger of penicillin was very small, but now with the use of this simple test, even this small danger has been eliminated, making penicillin one of the safest drugs to use.

Another example of a misleading and distorted argument against penicillin is that it has caused the development of stronger breeds of bacteria against which penicillin has no apparent effect. This argument goes further to say that after prolonged use of penicillin, the patient becomes "adapted" to it and penicillin no longer can be used for that patient. It is true that when any drug is used on a patient over a prolonged period of time, the effect of that drug will not be as great as it was originally. To a very minor extent, this is also true of penicillin. However, one of penicillin's greatest advantages is that it remains effective with continued use for a far greater period of time than does

almost any other known drug. As for the claim that penicillin has produced stronger, more virile strains of bacteria, one should recognize immediately the fact that since the beginning of time, organisms have tended to develop strains which survive better under changing conditions. To argue that penicillin is the cause for the development of these stronger strains is an unwarranted and unsubstantiated statement. While we should realize that penicillin is not perfect, that it does not kill all germs, we should also realize that it is the nearest approach we have so far made to a perfect answer to all medical problems.



/Supportive Defense: High-Range, Filler Essay/

Penicillin: The Miracle Drug

Medical authorities are generally agreed that one of man's greatest steps in the fight against disease and death was achieved in this century by the discovery and use of penicillin. Innumerable benefits have been derived from the use of this now indispensable drug. Penicillin has an unmatched ability to cure a wide range of diseases against which no other drug is effective. Furthermore, penicillin combats disease extremely rapidly, preventing the complications which often arise when illnesses are allowed to progress without early treatment. Because penicillin treatment is so important in the great recent advances in medicine, it will be useful to consider in a little more detail some of these benefits it has conferred on mankind in the fight against disease.

The primary benefit is, of course, its power to cure illnesses for which we have no other treatments. It is this power that has earned penicillin the title "miracle drug." Even some of the most dangerous infections can be stopped practically overnight. Before the discovery of penicillin there did exist a strong possibility that any serious infection would spread throughout the body and ultimately cause death. Today, however, only a few hours after penicillin is administered to the patient, the progress of the infection is checked and improvement is already evident. For many serious diseases (e.g., pneumonia, peritonitis, blood poisoning) penicillin is the most effective treatment, and for some diseases it is the only known treatment. We have probably brought more different types of infectious disease under control through the use of penicillin than through all the other drugs previously developed. Army physicians have reported that some diseases contracted by U.S. troops overseas were unidentified in medical literature. Yet, even these rare maladies responded favorably when treated with penicillin. Indeed, very few infectious diseases remain that cannot be quickly cured if properly treated by penicillin therapy.

Another unique advantage of penicillin treatment derives from the speed with which it takes effect. Usually the infection is stopped 24-48 hours after the beginning of treatment. This quick action means that penicillin is effective not only in curbing the ongoing illness, but also in preventing secondary illnesses. These secondary illnesses - the so-called "complications" - develop when the patient's resistance has been weakened

by a prolonged struggle with the primary disease. Often complications are more serious than the original illness itself: for example, prolonged infection may result in permanent damage to the patient's heart. By its fast action penicillin cures the initial infection before dangerous complications can occur.

/Attack Same: High-Range, Filler Essay/

Some Drawbacks Involved in the Use of Penicillin

The discussions of penicillin in the popular press mention repeatedly and exclusively its beneficial effects. A rather different evaluation is seen when we study the discussions of this drug in the professional journals of the medical, biochemical, and pharmaceutical professions. While the beneficial effects of penicillin are not, of course, denied in the professional journals, the scientists who engage in continuing research on its effects are expressing increasing concern over some of this drug's highly undesirable side effects. For example, some people are allergic to penicillin and with its continued use, more are becoming so. Also, its widespread use has resulted in the elimination of weaker strains of bacteria with the resulting production of new and more deadly strains against which it (and other antibiotics) are ineffective. Because the problem is so serious and the use of penicillin so widespread, it will be wise to look into some of these detrimental effects of penicillin in more detail.

One trouble with penicillin is that, as with almost all other powerful pharmaceutical drugs, there are some people who are allergic to it and suffer adverse affects ranging from minor rashes to death when it is administered to them. There are impressive numbers of cases reported in the medical journals in which injections of penicillin, given for relatively minor infections resulted in the death of the patient who happened to have a serious allergy to penicillin. This allergy problem is particularly serious in the case of penicillin for two reasons. First, it is serious because of its unpredictability. Penicillin allergies are hard to detect and while there are complex tests available, physicians do not as a rule give their patients such tests before administering penicillin. Furthermore, the allergy to this drug (as to many pharmaceutical agents) has the tendency to come and go unpredictably, so that the patient's having been found non-allergic by an earlier test or his having previously taken penicillin with no ill effects is no assurance that the next time he is given this drug he will not suffer unpleasant and even fatal reactions. A second reason why medical scientists and public health officials are becoming worried about penicillin allergies is that they are on the increase. The national medical statistics compiled monthly by the Public Health Service indicate that in the first years of its use, penicillin allergies were extremely rare, but ever since have been increasing at an accelerating rate. One of the theories for this

increase is that there is an accumulative effect of penicillin on the system, so that the first few times the person gets the drug he shows no adverse effects, but by the time he has gotten continued treatments during life, enough of the drug accumulates in his system to bring out the latent allergies. The other theory is that the stronger dosages that are being given currently (to combat the more resistant strains of bacteria that have developed) may also account for some of the increase in allergic reactions to penicillin.

The increased reliance on penicillin has produced yet another tragic consequence. Several hospitals in Houston, Detroit, London, and Tokyo have recently reported epidemics of deaths among new-born babies from staphylococcus infections against which penicillin had no effect. And yet penicillin used to be able to fight this particular form of bacteria successfully. Here we see another case of an increasingly serious effect of penicillin. Its use tends to result in the development of more resistant strains of germs, so hardy that neither penicillin nor other drugs are effective against them. Furthermore, since this drug works by stimulating the patient's system to produce antibodies, continual use habituates the patient to it, until soon neither penicillin nor other drugs have the required effect when needed. Hence, excessive use of penicillin has resulted in the development of some of the most deadly forms of germs ever known. And, at the same time, it is making it increasingly more difficult to stimulate the patient's system to produce the necessary antibodies to fight such infection. While penicillin obviously has conferred many benefits, one should not overlook that it has had some harmful effects as well.

Refutational Defense: Mid-Range, Filler EssayThe High Quality of Japanese Exports

Over the past two decades, Japan has made vast improvements in the quality of commodities exported to the United States. Previous to this time, the label "Made in Japan" has usually evoked an image of inferior quality. But this image has radically changed. Japan ships a great many different items to the U.S. The detailed list in the Japanese customs return takes about one hundred printed pages. Qualitative improvements have led directly to increased demand. Unfortunately, one still finds occasional unenlightened articles in the press, which serve to perpetuate outmoded ideas regarding the inferiority of Japanese goods. It is perhaps because electronic products and automobiles represent about two-thirds of the annual export revenue that these items have been most often subjected to attack. It has been claimed, for example, that Japanese made televisions are inferior to most foreign and American name-brands. In addition, Japan's major automobiles, the Toyota and Datsun, have been similarly attacked. Such assertions are distorted and misleading. Each day many Americans are faced with questions regarding what brand of car, electronic appliance, etc., to purchase; and since often the Japanese-produced item is the best buy, it is useful to review these misguided arguments.

One of the most distorted arguments against Japanese exports regards their color television sets, a product which represents a significant percentage of Japan's total exports to the U.S. Color sets produced by such firms as Matsushita, Hitachi, and Toshiba have come under attack for miscellaneous shortcomings such as inconvenient placement of buttons, the lack of a VHF channel-selector light (Hitachi) and only fair sound quality. Toshiba sets have been criticized for a degree of geometric picture distortion. Although many of the accusations are reasonably accurate, the reviews usually fail to mention that, aside from certain isolated parts and features, and in terms of overall quality, Japanese color television sets are superior to other foreign and American-made brands. Negative points made against the Japanese models are usually trivial when compared to the weaknesses of the competition. For example, televisions made by General Electric, a well-known American brand name, have considerably greater geometric distortion than any comparably priced Japanese models; Zenith and Philco models are subject to problems in sound quality; and no brand can match the sharp, bright picture quality of "Chromotron," the unique tube design produced by Sony of Japan. More

and more Americans are becoming aware of the high quality color televisions and other Japanese produced electronic equipment which continue to flood the American market.

A second area which has come under unjustified attack is Japan's automobile industry. Toyota and Nissan (Datsun) have been criticized for engineering flaws. It is true that Japan's "Big Two" have recalled thousands of cars since 1966. Yet, this is certainly no different from the experience of General Motors, Ford, Chrysler, and American Motors of the U.S., each of which has been forced to recall many thousands of cars, of numerous models, since that time. The increasing number of automobile recalls is primarily due to stepped-up safety regulations and enforcement of existing regulations by the U.S. government. This is particularly true of the Japanese cars, most of which have been cited for very minor defects. Many auto experts have called publicity regarding Toyota recalls ridiculous, since the defect was merely a small gasket which takes up to three minutes to repair. Apparently, consumers have not been misled by such publicity, as Japan has recently moved past West Germany into the number 2 position in automobile production. With expanding markets in every corner of the world, it is not unlikely that the Japanese will eventually replace the U.S. as the world's foremost auto maker.

Supportive Defense: Mid-Range, Filler Essay

The High Quality of Japanese Exports

Over the past two decades, Japan has made vast improvements in the quality of commodities exported to the United States. Previous to this time, the label "Made in Japan" has usually evoked an image of inferior quality. But, this image has radically changed. Japan ships a great many different items to the U.S. The detailed list in the Japanese customs return takes about one-hundred printed pages. Qualitative improvements have led directly to increased demand. Japan has made impressive gains in the iron, steel, and textile industries and is gaining much recognition in electronics. Its average annual rate of industrial growth from 1960-69 was 14.9%, compared with 9.7% for all other members of the Organization for European Cooperation and Development (OECD). The U.S. is by far Japan's largest market. As American consumers have increased their confidence in Japanese commodities, the U.S. has increased its import rate. Today, the U.S. imports over 30% of Japan's total exports. One reason for Japan's rapid industrial growth has been their willingness to import foreign technology. An equally important factor is the smooth relationship between labor and management in Japanese factories. Let us explore more thoroughly the reasons which render the label "Made in Japan" a sign of quality merchandise.

The Japanese have augmented their rapid technical progress by importing new foreign technology. And, they have managed this vital importation of expertise without burying themselves under a pile of debts. One of the reasons for this is Japan's highly competent, cautious bureaucracy. For example, the Ministry for International Trade and Industry (MITI), a body which has no exact equivalent in other nations, screens all potential agreements involving technological importation. They not only bargain for advantageous modifications in the agreements, but also devise them so as to allow other Japanese firms to use the new ideas and equipment. At the same time, Japan has not ignored the need to develop its own technology. In 1966, the Japanese Research and Development Corporation was established by government act. The corporation has been highly successful, partly because it has concentrated intensely on a small number of projects. JRDC has a permanent staff of 50 scientists who receive about 80 projects a year. From these, about 10 are approved by the Development Council. NRDC has been widely acclaimed for producing sensible, inexpensive innovations which have immediate value for industrialists.

Another reason why Japanese exports are of high quality is the unusually smooth relationship between labor and management. Japanese factory employees are never laid off, even during slack periods. This comforting sense of security is important. Job hopping is almost non-existent. The deeply rooted Japanese system of pegging raises and promotions almost exclusively to seniority is an inducement for a young person to stay with one company. Eventually, he can bank on becoming a foreman. During his year of employment, he is likely to be transferred from one department to another, periodically undergoing retraining. The average factory worker does not, then, have to look forward to a lifetime of doing a monotonous task. A new employee at a Japanese steel plant works a 42-hour week, is paid at a higher rate than a comparable U.S. factory worker, and enjoys one month off in paid vacation and holidays. In addition, companies inspire quality work through a generous system of bonuses geared to profits, a benefit which nets the worker as much as an additional 50% of his annual base salary. Fringe benefits cushion almost every aspect of a worker's life. It is easy to understand why the Japanese are loyal to their employers, and why Japanese industry has gained world-wide recognition for producing quality merchandise.



/Attack Same: Mid-Range, Filler Essay/The Low Quality of Japanese Exports

Although in recent years Japan has vastly increased mass production and exportation of a wide variety of commodities, quantitative progress has not been accompanied by corresponding improvements in quality. Despite the general low quality of Japanese exports, many consumers continue to buy the products, largely because of cheap prices. Unfortunately, while the purchase of cheap products may initially appear to represent a savings, it often results in a waste of money. Before making such a purchase, prospective buyers should consult a competent, reliable source of product evaluation for appraisal of the brand and its competitors. The majority of Japan's export profits are from electronic equipment and automobiles. A close look at the quality of Japanese color televisions, a leading export, reveals that in most cases American consumers are not getting their money's worth. The same is true of automobiles manufactured by Japan's leading firms, Toyota and Nissan (Datsun). By continuing to purchase inferior products, consumers perpetuate their distribution on the market. Consequently, it is important that Americans be made aware of the low quality merchandise exported to the U.S. from Japan. Let us examine this situation.

Ratings of the color television sets produced by the world's leading manufacturers show that those made by Japanese firms, including Matsushita, Hitachi, Sony, and Toshiba are inferior to those of other high volume distributors. Experts agree that while it is possible to obtain Japanese color sets which are equal in quality to other foreign and American brands, the prices average 10% to 15% higher. For the cost of the latest 12-inch Sony color set, the consumer can select the latest 23-inch model from such popular and reliable brands as Zenith, RCA, and Philco. Experts have also alerted consumers to adopt a "wait and see" attitude toward Sony's new "chromotron" tube, for which the firm has made great claims regarding picture brightness, since the innovation has not passed the crucial test of mass production on an economic basis. Shortcomings have been cited in regard to all Japanese brands. For example, Toshiba sets are known for geometric picture distortion; Hitachi models for the annoying inconvenience of no lighting on the UHF channel selector. Most Japanese sets are rated only fair in sound quality, well below competing brands. An overall drawback to many Japanese television manufacturers is the lack of concern for design details, such as size and convenient location of buttons, lighting on UHF

and VHF channel selectors, and attractive design features found in major American brands.

Another example of the low quality of Japanese exports to the U.S. regards automobiles. Both Toyota and Nissan (Datsun) have come under continued attack by the U.S. government for defective cars. The government recently reported that Japan's "Big Two" had been secretly recalling defective cars sold in the U.S. long before the public was made aware. As a result, the Japanese government immediately demanded that all 12 Japanese auto makers reveal the extent of their engineering flaws. The findings are startling. After examining models built between 1964 and 1970, the auto makers listed over 2,900,000 as potentially defective. In the U.S., a market that they have only lately penetrated, Japanese companies have had to call back over 200,000 autos since 1966. A total of 39,000 1969 Datsuns exported to the U.S. have defects ranging from front suspensions that can be bent by rough roads, to axle assemblies that burn out, to shift levers that snap off. The Japanese government is drawing up legislation to force auto makers to report defective cars and publicly recall them for repair.

APPENDIX B

Attitude Questionnaire

Attitude Questionnaire/

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.

The effects of penicillin have been, almost without exception, of great benefit to mankind.

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

✓ 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 / 10 / 11 / 12 / 13 / 14 / 15 /  
/ Definitely / Probably / Uncertain / Probably / Definitely /  
False False True True True

Commodities made in Japan are, for the most part, of low quality.

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

The best way to prevent tooth decay is to brush one's teeth frequently.

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

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

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

There are disadvantages to brushing one's teeth too often as well as too seldom.

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

The benefits to mankind from using penicillin have far outweighed any disadvantages.

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

Japan's increasing production and sales of exports has not been accompanied by corresponding improvements in the quality of their products.

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

✓ If automobiles on U.S. roads were 100% free of defects, the number of traffic accidents would still not be substantially reduced.

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

In terms of quality, Japan's exports do not compare favorably with those of other industrial-oriented countries.

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

Probably the greatest single advance in the history of medical science was the discovery of penicillin.

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

✓ Vehicle malfunctions are a minor 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 True True

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

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

Commodities imported from Japan are usually a "bad buy."

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

Penicillin should be considered a "wonder drug" since there are so many advantages to its use.

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

APPENDIX C

Instructions to the Subjects

/Instructions: Cover Page for Test Booklets/

Skills Booklet No. \_\_\_\_\_

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. The speech department (Science or Economics) has agreed to assist in evaluating the validity of the test. Consequently, we are asking speech 100 students to help us. 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 (or group of words) in each paragraph. You will be given 3 minutes to complete each page. When you finish the page, stop and await further instructions.
- (3) At no time should you turn back to a previous page.

DO NOT GO ON TO THE NEXT ESSAY UNTIL ASKED TO DO SO



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