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SOURCE CREDIBILITY, AUTHORITARIANISM,  
AND MESSAGE AMBIGUITY.

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ATTITUDE CHANGE AS A FUNCTION OF  
SOURCE CREDIBILITY, AUTHORITARIANISM,  
AND MESSAGE AMBIGUITY

by  
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## FORMULATION OF THE PROBLEM

The understanding of the most effective means for a persuasive communication to change an attitude held by an individual or group must address itself to the characteristics of the source of that persuasive communication; the nature and organization of the arguments presented in the persuasive communication; the medium used to present the persuasive communication; and the characteristics of the audience exposed to the persuasive communication. This assertion parallels the often-quoted formula proposed by Lasswell (1948) for analyzing persuasive communications; "who says what, to whom, how, with what effect". McGuire (1969) refers to these variables of persuasive communications as source, message, channel, and receiver factors.

In this investigation we were concerned with the effects of source, message, and receiver variables of a persuasive communication on the degree of attitude change.

Source Variables

Kelman (1958, 1961) has specified three aspects of the source variable, viz., power, attractiveness, and credibility. Kelman claims that the nature of attitude change varies as a function of the type of source valence.

If the source has power over the receiver's means to attain desirable goals, then the receiver responds in terms of compliance, i. e., the receiver acquiesces to the source in public where the source can apply positive and negative sanctions to the receiver, but not in private where the source does not have surveillance over the receiver. Furthermore, the

receiver will revert to his own position in public, should the source lose his power over the receiver.

If, on the other hand, the source is attractive to the receiver, the latter responds in terms of identification. Identification is said to occur when the receiver accepts the influence because he wants to maintain a satisfying self-defining relationship with the source of influence. This relationship may take the form of classical identification, where the receiver takes over the role of the source, or it may take the form of a reciprocal role relationship. The receiver will continue to accept the position advocated by the source as long as his role relationship to that source remains salient.

Finally, if the source characteristic is that of credibility, i. e. , the extent to which the source is an expert and trustworthy, then the receiver's response is in terms of internalization. Internalization is a mode of attitude change which is based on the receiver's desire to have an accurate stand on the issue. With this type of attitude change, the receiver actually integrates the new position into his value system.

Other investigators have also analyzed the different components of the source variable (cf. McGuire, 1969). French (1956), for example, has isolated five such components, viz. , expertise, attraction, coercion, reward, and legitimacy. The first two correspond roughly to Kelman's factors of credibility and attractiveness. The third and fourth of French's source components correspond to Kelman's factor of power.

In general, it can be said that Kelman's analysis of the source vari-

able encompasses most of the source components that have been postulated by other investigators.

In the literature we find studies on the effects of the source variables of power, attractiveness, and credibility on the extent of attitude change manifested by the receiver of a persuasive communication (cf. McGuire, 1969). In this investigation we were only concerned with the effects of the variable of source credibility on the degree of attitude change.

The general question underlying the studies of the effects of source credibility on attitude change is whether a persuasive communication presented by a high credibility source produces more attitude change than the same communication presented by a low credibility source. Most investigations do find that a high credibility source is more effective in producing attitude change than a low credibility source, even though both sources advocate the same position and present the same supporting arguments for that position (Aronson, Turner and Carlsmith, 1963; Hovland and Weiss, 1951; Kelman and Hovland, 1953; Powell, 1965; Tannenbaum, 1956; Watts and McGuire, 1964). Hovland and Weiss (1951), for example, measured the S's attitudes towards a number of issues, such as the feasibility of manufacturing atomic-powered submarines at that time. The S was also asked to evaluate the trustworthiness of a list of sources, such as Oppenheimer, the physicist, and the Russian newspaper Pravda. Then, five days later, he was asked to read a magazine or newspaper article which advocated a position opposite to his own. For some of the Ss the article was attributed to a high credibility source, while for others the

same article was attributed to a low credibility source. Immediately following the last task, the S's attitudes towards the issues were measured for a second time. The net percentage of Ss who changed their attitudes in the direction of the communication was, on the average, 23 percent when the sources were highly credible, and 6.6 percent when the sources were of low credibility. This difference in net percentage of change was statistically significant.

Hovland, Janis and Kelley (1953) have analyzed the effects of source credibility on attitude change in terms of the basic psychological processes involved when a receiver of a persuasive communication changes or fails to change his attitude in the direction advocated by the communication. They postulate three psychological processes involved in the persuasive communication situation, namely, attention, comprehension, and acceptance. The impact of a persuasive communication on a receiver depends on the degree of attention he gives to the communication, the comprehension or learning of what it is that the communication is advocating and, finally, the extent to which the receiver accepts the communication's recommendations. Theoretically, the variable of source credibility may affect either the attention, the comprehension, or the acceptance process, or all of these processes. Thus, it is possible that the low credibility source produces less attitude change than a high credibility source because when the former presents the communication, the receiver does not pay as much attention to the content as he would if the latter were presenting the same communication. Consequently, the receiver of a

communication presented by a low credibility source fails to learn the material to the same extent as when the source is of high credibility and, failing to learn it, is unable to adhere to the recommended conclusions.

In their review of the literature, Hovland, Janis and Kelley (1953), conclude, however, that in the laboratory setting there is no difference in the learning of the persuasive communication between receivers exposed to a high credibility source and receivers exposed to a low credibility source. Hovland and Weiss (1951) in the study partially described earlier, administered a multiple-choice questionnaire in order to assess the amount of material learned by the Ss. These authors found no difference in learning between Ss exposed to a high credibility source and Ss exposed to a low credibility source. Other investigators also find no relationship between the amount of learning of the communication and the degree of source credibility (Hovland and Mandell, 1952; Kelman and Hovland, 1953).

Hovland and his associates conclude that when we are dealing with captive audiences, the effects of source credibility with respect to attitude change are not related to the underlying psychological processes of attention and comprehension. Hence, it must be said that variations in the credibility of the source affects the extent to which the receiver will accept the recommendations made by the communication. That is, when the source is of high credibility, the receiver is more motivated to accept the recommendations made by the source, as compared to a low credibility source. Inasmuch as the degree of acceptance of the communi-

cation determines the amount of attitude change in the direction advocated by the communication, we find that a high credibility source produces more attitude change than a low credibility source, even though both sources present the same supporting arguments and advocate the same position.

Hovland, Janis and Kelley (1953) raise the question as to why acceptance of the communication is likely to be heightened by an increase in source credibility. They state:

Our principal assumption is that the individual is motivated to accept conclusions and recommendations which he anticipates will be substantiated by further experience or will lead to reward, social approval and avoidance of punishment. (p. 38).

These anticipations are increased when a recommendation is presented by a high credibility source, and are decreased when the source is of low credibility.

It seems to us that there are two distinct parts to the thesis presented by Hovland and his associates. One part refers to the instrumental value for the receiver as a result of being in agreement with a high credibility source. The endorsement of a position advocated by a high credibility source leads to social approval, or at least protects the receiver from the social disapproval that may result if he deviates from the position endorsed by the highly credible source. The other part of Hovland's thesis refers to the perceived validity of the persuasive com-

munication. Hovland, Janis and Kelley (1953) claim that a receiver of a persuasive communication will accept that communication to the extent to which he anticipates that the arguments in the communication will be validated by further experience. We would like to add, however, that for the receiver to anticipate that the communication will be substantiated by subsequent experiences means that he must perceive the communication as being true or valid at the time it is presented.

It is possible, then, that when a high credibility source presents a persuasive communication, the arguments appear to carry relatively more weight, to be more reasonable, to be more valid than when the source is of low credibility. It seems reasonable to assume that the amount of attitude change induced by a persuasive communication is a function, in part, of the degree of validity attributed to the communication. Thus, we find that a high credibility source induces relatively more attitude change than a low credibility source.

The above conceptualization can be said to apply to Kelman's analysis of the effects of source credibility on attitude change. The mode of attitude change with this type of source variable - internalization - is mediated by the receiver's desire to have an accurate opinion on the issue. It seems to us, however, that before the receiver changes his attitude for the sake of accuracy, he must perceive the arguments advanced by the credible source as being true and valid. It is reasonable to expect that the attribution of validity to the persuasive communication decreases as the credibility of the source diminishes. Consequently, the degree of

attitude change will also decrease as the credibility of the source decreases, i. e., internalization decreases with decrements in the credibility of the source.

There is some empirical evidence for the presumed relationship between degree of source credibility and the extent of perceived validity of the communication. Hovland and Weiss (1951), and Kelman and Hovland (1953) asked their Ss to indicate the extent to which the source of the communication was fair in his presentation of the issues, and the extent to which the source's recommendation was justified by the facts. They found that the same communication is perceived as being more fair, more justified when the source is of high credibility as compared to a low credibility source. In other words, when the source is highly credible the communication is perceived as being more valid as compared to a low credibility source. The above investigators also found that a high credibility source produced more attitude change than the low credibility source.

There are a number of studies, however, where the above relationships are not obtained (Hovland and Mandell, 1952; Weiss, 1961).

Hovland and Mandell (1952), manipulated the degree of trustworthiness of the source. The target issue was devaluation of the dollar, and the communication advocated that the dollar should be devalued. In one experimental condition, the source was an impartial economist from a university - High Trustworthy. In a second experimental condition, the source was an executive of an importing firm, who had something to gain personally if the dollar were devalued - Low Trustworthy.

It was found that the High Trustworthy source was perceived as giving a fair and honest presentation of the issues to a greater extent than the Low Trustworthy source, i. e. , there was a difference in perceived validity as a function of source trustworthiness. However, there was no difference in attitude change between receivers exposed to the High Trustworthy source and receivers exposed to the Low Trustworthy source.

Hovland and Mandell (1952) suggest that perhaps the difference in source credibility between the two sources used in their study was not large enough to produce differences in extent of attitude change.

Another possible explanation for the above results is that the sources in the Hovland and Mandell (1952) study differed only with respect to degree of trustworthiness, and not with respect to expertness, i. e. , an economist and a business executive are more or less equal with respect to expertness. The implication of this last explanation is that it is the component of expertness which is primarily responsible for the usually obtained effects of source credibility on attitude change, (cf. McGuire, 1969). This issue, however, is by no means resolved. Some investigators claim that it is the component of trustworthiness which is primarily responsible for the relationship between source credibility and attitude change, (cf. Kelman and Hovland, 1953).

In general, however, it may be said that when there is a covariation between expertness and trustworthiness, as was the case in the present study, we may expect that a high credibility source will lead to greater perceived validity and greater attitude change than when the source is of

low credibility. Formally, then, we predict that:

Hypothesis 1. A persuasive communication presented by a high credibility source will be perceived as being more valid than when it is presented by a low credibility source.

Hypothesis 2. A persuasive communication presented by a high credibility source will produce more attitude change than when it is presented by a low credibility source.

We would like to point out, however, that the stated hypotheses are expected to obtain only when the receiver's attitude towards the issue is measured immediately following the persuasive communication. When the after communication attitude is taken following a time lapse from the point of communication exposure, three to four weeks, there is no difference in attitude change between a high credibility and a low credibility source - the sleeper effect, (Hovland and Weiss, 1951; Kelman and Hovland, 1953; Watts and McGuire, 1964).

Hovland and Weiss (1951) claim that the sleeper effect occurs because with the passage of time the receiver does not spontaneously associate the communication with the source. It would seem, then, that the effects of source credibility on attitude change are manifested only when the receiver is actively cognizant of the association between communication and source. Inasmuch as the association between source and communication is likely to be active immediately after the presentation of the communication, it is found that attitude change varies as a function of source credibility.

In the present investigation, we were only concerned with the situation

where the after communication attitude is measured immediately after the persuasive communication. Hence, the stated hypotheses. However, one of the purposes of this study, as elaborated in the sections that follow, is to isolate some of the conditions where the stated hypotheses may not obtain even when the after communication attitude is measured immediately following the presentation of the persuasive communication.

#### Message Variables

A variety of message variables have been investigated in this area of research (Hovland, Janis and Kelley, 1953; Hovland, Lumsdaine and Sheffield, 1949; Hovland, Mandell, et. al. , 1957). The underlying concern in these investigations has been to determine how the properties and organization of a persuasive communication are related to the extent of attitude change. The following are some of the questions that have been raised. Should one present only that side of the issue being advocated by the communication , or should the communication discuss both sides of the issue, recommending one side while refuting the other? If only the advocated side is presented, should the communication utilize the strongest arguments at the outset or at the end? When both sides of the issue are presented, does the side presented first or the side presented last have the advantage? If the communication appeals to the fears of the audience, how intense should that fear-appeal be? Should the communication explicitly state its recommendation, or let the audience derive the implicit recommendation intended by the communication?

Hovland and Mandell (1952), for example, studied the relative effective-

ness of a communication that explicitly stated the recommended position to be taken, and a communication that let the audience infer the intended recommendation. They measured the S's attitude towards devaluation of the dollar. The Ss then listened to a tape-recorded speech on general economic principles, and the conditions which would make devaluation of currency desirable or undesirable. From these principles and a statement of the conditions prevailing in the United States, the logical conclusion to be drawn was the desirability of devaluating the dollar. To some Ss, however, the conclusion was made explicit by the communication, while other Ss were allowed to arrive at that conclusion on their own. Immediately following the communication, the Ss again indicated their attitude toward devaluation of the dollar. It was found that the proportion of Ss who changed in the direction of the communication was significantly greater when the conclusion was explicitly stated by the communication as compared to the condition where the Ss were allowed to infer the intended conclusion.

In the present investigation we will be concerned with the message variable of degree of communication ambiguity.

There are different types of communication or message ambiguity, but, in general, the variable of message ambiguity may be said to refer to the extent to which a persuasive communication lends itself to different interpretations of the position being advocated by the communication.

One type of message ambiguity refers to the situation where the receiver of a persuasive communication does not really know whether the communication is for or against the attitude object. Manis (1961), for

example, manipulated the degree of message ambiguity via the "cloze" procedure (cf. Taylor, 1953). With this procedure, a message is made ambiguous by deleting every nth word from the communication. However, if the receiver cannot tell with any degree of confidence whether the communication is for or against the attitude object, it becomes doubtful whether we can speak of such a communication as being persuasive.

A second type of message ambiguity, and one which was manipulated in this study, refers to the situation where the receiver does know the side being advocated by the communication, but where he does not know for certain how intensely or how strongly the communication is for or against the attitude object. Thus, if an ambiguous communication is perceived as falling on the against side of the issue, it still may be interpreted as being anywhere from mildly against to very strongly against the attitude object. In contrast, an "unequivocal" communication would have a relatively narrower range of interpretation, e. g. , it may range from strongly to very strongly against the attitude object.

The question arises that given an ambiguous communication, what determines the receiver's selection of the one among the various interpretations that can be given to the ambiguous communication. It would be reasonable to assume that one determining factor is the characteristics of the source of the ambiguous communication. According to "Balance Theory" (cf. Festinger, 1957; Heider, 1958; Newcomb, 1953; Osgood and Tannenbaum, 1955), a person holding a view at variance with that held by a positive source, experiences psychological discomfort. Similarly, if

the person holds a view which is being advocated by a negative source, he also experiences psychological discomfort. There are a number of things the person can do to reduce this psychological discomfort. He can change his attitude in the direction advocated by a positive source, thus producing agreement with the positive source. When the source is negative, the person can change his attitude in the direction opposite to that advocated by the negative source, thus inducing disagreement with the negative source. One alternative approach for producing agreement with a positive source, and disagreement with a negative source, is to reinterpret the position being advocated in the communication, provided the situation allows it, such as when the communication is relatively ambiguous.

The receiver of an ambiguous communication, presented by a positive source, instead of changing his own attitude on the issue, may assimilate the position being advocated by the positive source, i. e. , perceive the position of the positive source as being closer to his own position than it actually is. Conversely, when the source is negative, the receiver may contrast the position advocated by the negative source, i. e. , perceive it as being farther away from his own position on the issue than it actually is.

There is some empirical evidence for the presumed relationship between the interpretation or displacement of a persuasive communication and the valence of the source. Kelman and Eagly (1965), presented a communication to high school Ss, advocating the need for more clear-cut

standards for the behavior of teen-agers. Most Ss in this population were either neutral or mildly negative with respect to the position presented in the communication. Kelman and Eagly report that the communication was "sufficiently" ambiguous so that it could be interpreted as being either more favorable or more unfavorable to teen-agers than it actually was. If the S interpreted the communication as being more favorable than it was, he was manifesting assimilation. On the other hand, if he perceived the communication as being more unfavorable towards teen-agers than it actually was, he was said to be manifesting contrast.

Kelman and Eagly (1965) manipulated two levels of source valence. Some Ss were exposed to a source which was positive from the point of view of these students. Other Ss were exposed to a negative source. Following the communication, the Ss were given sets of three statements, and they were asked to indicate which of the three statements best represented the position in the communication. One of the statements reflected the actual position of the communication. The other two statements, respectively, were either more or less favorable towards teen-agers.

Kelman and Eagly found a general tendency to assimilate the communication when it was associated with a positive source, and a tendency to contrast the communication when it was presented by a negative source. Other investigators have also found a tendency to assimilate the position of a positive source (Harvey, Kelley and Shapiro, 1957; Kelley and Woodruff, 1956; Manis, 1961).

One would expect, however, that there are stimulus constraints on the tendency to assimilate the position indicated in a communication presented by a positive source, and the tendency to contrast the communication when associated with a negative source. When a communication is unequivocal, there should be no sharp differences in the placement of the position advocated in the communication, between receivers exposed to a positive source and receivers exposed to a negative source. It is only when the communication is relatively ambiguous, as Kelman and Eagly (1965) imply, should we expect assimilation of a communication associated with a positive source, and contrast of the communication when associated with a negative source. In other words, the degree of displacement of a communication is determined by the extent to which the communication is ambiguous.

On the basis of the preceding discussion, we predict that:

Hypothesis 3. The more ambiguous the communication presented by a high credibility source, the greater the degree of assimilation on the part of the receivers of that communication.

Hypothesis 4. The more ambiguous the communication presented by a low credibility source, the greater the degree of contrast on the part of the receivers of that communication.

At this point, we would like to raise the issue as to whether the variable of message ambiguity interacts with the source variable of credibility as regards Hypotheses 1 and 2.

When the persuasive communication is unequivocal we expect that both

hypotheses will obtain, i. e. , the communication presented by the high credibility source should be perceived as being more valid and it should produce more attitude change than when the source is of low credibility. It remains to be seen whether this is also the case when the persuasive communication is relatively ambiguous.

The expectation that an ambiguous communication presented by a high credibility source would be assimilated, and contrasted when presented by a low credibility source, should not affect the prediction that the arguments presented by a high credibility source will be more accepted or perceived as being more valid than when the same arguments are presented by a low credibility source. If anything, the difference in perceived validity of the communication as a function of source credibility should be even greater when the communication is ambiguous, as compared to the case of an unequivocal communication. The receiver's attribution of validity to the arguments in an ambiguous communication associated with a high credibility source would be really based on two reasons. One, the source has positive valence, and two, as a result of assimilation, the high credibility source would be perceived as advocating a position closer to the receiver's own position on the issue. Similarly, the receiver would attribute less validity to an ambiguous communication associated with a low credibility source because of the negative valence of that source, and because, as a result of contrast, the low credibility source would be perceived as advocating a position relatively far from the receiver's own position on the issue. Sherif reports that the farther away the communi-

cation is from the receiver's initial position on the issue, the greater the likelihood that the communication will be perceived as being biased and propagandistic (Hovland, Harvey and Sherif, 1957; Sherif and Hovland, 1961; Sherif, Sherif and Nebergall, 1965). It follows, therefore, that a communication presented by a high credibility source will be perceived as being more valid than when the same communication is presented by a low credibility source, when the communication is ambiguous as well as when it is unequivocal.

Given the presumed relationship between perceived validity and attitude change, one would be led to predict that a high credibility source will induce more attitude change than a low credibility source, regardless of the degree of message ambiguity. However, this may not be the case. As the communication presented by a high credibility source is assimilated, i. e., as the communication is perceived as advocating a position similar, or closer, to the receiver's initial attitude towards the issue, the pressure to change in the direction advocated by the source decreases (cf. Kelman and Eagly, 1965; Manis, 1961). That is, the receiver may simply say that the source is advocating a position relatively close to the receiver's own position, and that, therefore, there is not as great a need to change his attitude. Since receivers exposed to an ambiguous communication presented by a high credibility source are expected to assimilate

late the communication, they will experience less pressure to change. This smaller pressure to change may cancel the greater perceived validity on the part of these receivers. Consequently, it may prove to be the case, that given an ambiguous communication, receivers exposed to a high credibility source will not change their attitudes to a greater extent than receivers exposed to a low credibility source.

It is possible, then, that the degree of message ambiguity is a limiting condition on the expected relationship between perceived validity and attitude change. That is, it may prove to be the case that the prediction that a high credibility source induces more attitude change than a low credibility source, applies only when the communication is relatively unequivocal. The proposed study will attempt to determine the nature of the relationship between source credibility and degree of attitude change when the persuasive communication is relatively ambiguous.

#### Receiver Variables

The study of receiver variables has concerned itself first with the question as to whether people are more or less susceptible to influence by a persuasive communication; and second with attempts to establish the determinants or covariates of such varying degrees of susceptibility (Hovland, Janis and Kelley, 1953; Janis, Hovland, et. al., 1959).

Janis and Field (1959), for example, investigated the possibility that some people tend to be indiscriminately influenced by persuasive communications regardless of their substantive orientation. They measured the S's attitudes towards a variety of issues, e. g., how frequently should

radio stations play classical music. The S then read a series of communications advocating positions on five different issues. Immediately following these communications, the S's opinions on the entire list of original issues were measured for a second time. One week later, the S, again, read five persuasive communications on the five issues to which he had been exposed a week before, but in this instance the communications advocated a diametrically opposed position. Their attitudes to all of the original issues were then measured for a third time. An S was considered to have a general tendency to be susceptible to persuasive communications if he changed in the direction of the side advocated by the first communication, and also changed in the direction of the opposite side advocated by the second communication presented a week later. A factor analysis of the intercorrelations among the scores of attitude change in response to both sets of communications yielded a general persuasibility factor, that is, some people are generally influenced by persuasive communications regardless of their content. Janis and Field also found that high persuasibility appears to be related to low self-esteem, i. e., persons with low self-esteem are more susceptible to influence than persons with high self-esteem.

This study concerned itself with the receiver variable of authoritarianism (Adorno, et. al., 1950). The authoritarian personality is conceptualized as being the type of person who rigidly adheres to conventional middle-class values and has an exaggerated concern with such values, is submissive toward the moral authorities of his ingroup, condemns and

rejects people who violate conventional values, is preoccupied with power and status considerations, tends to identify with powerful figures, and is generally hostile toward members of outgroups.

As can be seen, the concept of the authoritarian personality is rather complex, but, in general, it can be said that the authoritarian person reacts and evaluates other persons and their messages as a function of the social status of these other persons. The authoritarian person is the kind of individual who has an exaggerated deference towards persons of high status, and considerable disdain towards those of low status.

Another way of stating the above is that the authoritarian person is relatively more source-oriented in his approach to communication, i. e., he would tend to place relatively more weight to the characteristics of the source when evaluating a persuasive communication (cf. Schroeder and Hunt, 1958). Less authoritarian persons, on the other hand, place relatively more weight to the content of a persuasive communication when evaluating that communication.

It stands to reason that authoritarian receivers would be affected by variations in the credibility of the source to a greater extent than less authoritarian receivers. Hence, it would be reasonable to expect that when a persuasive communication is presented by a high credibility source, "high" authoritarian receivers will attribute more validity to that communication and change in the direction advocated by this source, to a greater extent than "low" authoritarian receivers. Conversely, when the source is of low credibility, high authoritarian receivers should attribute

less validity to the communication and change less than the low authoritarian receivers. In other words, we expect an interaction between source credibility and authoritarianism in their effects on the perceived validity of a persuasive communication and the degree of attitude change induced by a persuasive communication.

There is some empirical support for our expectations. Harvey and Beverly (1961), and Wagman (1955) found that authoritarian receivers change their attitudes more than low authoritarian receivers when the persuasive communication is presented by a high status source. When the source is anonymous, high authoritarian receivers change their attitudes less than low authoritarian receivers. Wagman (1955) measured the Ss' attitudes towards discrimination against the Negro. The Ss were then confronted with a communication advocating the elimination of racial discrimination towards the Negro. In some of the experimental conditions the source was either a business executive or a military officer. There was also a condition where the source was not named, which Wagman calls the "information condition", i. e. , the source of the communication was anonymous. Although Wagman's (1955) results are far from conclusive, he found in the conditions in which the sources were of high status, that authoritarian Ss changed their attitudes in the direction of the communication to a greater extent than the less authoritarian receivers. However, in the information condition, low authoritarian Ss showed more attitude change than high authoritarian Ss.

Harvey and Beverly (1961) measured the attitudes of Ss towards the

sale and drinking of alcohol, and the extent to which these Ss were authoritarian. All of these Ss had a strong opposition to alcohol on religious grounds. One week later, the Ss were exposed to a communication advocating the conditional sale of whiskey. One group of Ss were told that a preacher, a high status source for these Ss, had written the communication. Another group of Ss was not told the identity of the speaker. Harvey and Beverly (1961), found that those subjects high in authoritarianism changed their attitudes more than low authoritarians when the communication was presented by a high status source. However, when the source was anonymous, high authoritarians changed their attitudes significantly less than low authoritarians.

On the basis of the preceding discussion, we predict that:

- Hypothesis 5. Given a persuasive communication presented by a high credibility source, high authoritarian receivers will perceive the communication as being more valid than low authoritarian receivers.
- Hypothesis 6. Given a persuasive communication presented by a high credibility source, high authoritarian receivers will change their attitudes in the direction advocated by the source to a greater extent than low authoritarian receivers.
- Hypothesis 7. Given a persuasive communication presented by a low credibility source, high authoritarian receivers will perceive the communication as being less valid than low authoritarian receivers.
- Hypothesis 8. Given a persuasive communication presented by a low credibility source,

high authoritarian receivers will change their attitudes in the direction advocated by the source to a lesser extent than low authoritarian receivers.

It remains to be seen, however, whether the stated hypotheses will obtain regardless of the degree of message ambiguity. It may prove to be the case that when a high credibility source presents a communication which is relatively ambiguous, high authoritarian receivers may not necessarily change their attitudes to a greater extent than low authoritarian receivers.

As we argued earlier, there seems to be a tendency on the part of people to be in agreement with positive sources, and to be in disagreement with negative sources. One would expect that people differ with respect to this tendency to be in concurrence with positive sources, and to be in disagreement with negative sources. It is very likely that persons who are very sensitive to source-related cues, such as the authoritarian person, would have a stronger need to be in agreement with positive sources, and to be in disagreement with negative sources. Consequently, we expect that authoritarian receivers will react with greater intensity whenever they find themselves in disagreement with a positive source, and in agreement with a negative source.

One way to achieve concurrence with positive sources, and disagreement with negative sources, is via assimilation of the former, and contrast of the latter, provided, of course, the situation allows it, such as when the communication is relatively ambiguous. It follows then, that when a

positive source presents an ambiguous communication, high authoritarian receivers will assimilate that communication to a greater extent than low authoritarian receivers. By the same token, when a negative source presents an ambiguous communication, high authoritarian receivers will contrast the communication to a greater extent than low authoritarian receivers. Formally, then, we predict that:

Hypothesis 9. Given a relatively ambiguous communication presented by a high credibility source, high authoritarian receivers will assimilate the position advocated by the source to a greater extent than low authoritarian receivers.

Hypothesis 10. Given a relatively ambiguous communication presented by a low credibility source, high authoritarian receivers will contrast the position advocated by the source to a greater extent than low authoritarian receivers.

In light of the last two hypotheses, we will now consider whether our predictions regarding the interaction between source credibility and authoritarianism with respect to perceived validity and attitude change, will also obtain when the communication is relatively ambiguous.

The fact that high authoritarians are expected to contrast an ambiguous communication presented by a low credibility source to a greater extent than low authoritarians does not affect our prediction that high authoritarians will attribute less validity to that communication than low authoritarians. On the contrary, when such is the case, the high authoritarian receiver has two reasons for attributing less validity to the communication, as compared to the low authoritarian receivers. One, the

negativeness of the source, and, two, the high authoritarian receiver is expected to place the communication farther away from his own position on the issue, as compared to the low authoritarian receiver. As mentioned earlier, it has been found that the more discrepant a communication is from the receiver's own position on the issue, the greater the likelihood that it will be perceived as biased and propagandistic (cf. Hovland, Harvey and Sherif, 1957; Sherif and Hovland, 1961; Sherif and Nebergall, 1965).

Given the assumed relationship between perceived validity and attitude change, we can still maintain our prediction that high authoritarians will change their attitudes less than low authoritarians, even when a low credibility source presents an ambiguous communication. In other words, when a low credibility source presents a persuasive communication high authoritarian receivers are expected to perceive it as less valid, and change their attitudes less than low authoritarian receivers when the communication is ambiguous as well as when it is unequivocal. That is, hypotheses 7 and 8 are expected to obtain regardless of the degree of message ambiguity. Let us now consider the condition where the ambiguous communication is associated with a high credibility source.

When a high credibility source presents an ambiguous communication, high authoritarians are expected to assimilate that communication to a greater extent than low authoritarians. This difference in assimilation does not affect our prediction that high authoritarians will attribute more validity to that communication as compared to low authoritarians. When

such is the case, the high authoritarian receiver is not only influenced by the positiveness of the source in his evaluation of the communication, but also by the fact that he perceives the communication as being closer to his initial position on the issue, as compared to the low authoritarian receiver. Thus, it seems that hypothesis 5 which states that high authoritarians, as compared to low authoritarians, will attribute a greater degree of validity to a communication associated with a high credibility source, is expected to obtain when the communication is ambiguous as well as when it is unequivocal. Given the expected relationship between perceived validity and attitude change, one would be led to predict that high authoritarians will change their attitudes more than low authoritarians even when a high credibility source presents an ambiguous communication. However, this may not be the case. Inasmuch as the high authoritarian receiver is expected to assimilate the ambiguous communication to a greater extent than the low authoritarian receiver, the former may experience less pressure to change. As argued earlier, this smaller pressure to change may cancel the effects of the greater perceived validity on the part of the high authoritarian receiver, and as a result, he may not change more than the low authoritarian receiver.

Thus, we see that hypothesis 6 which states that high authoritarian receivers will change their attitudes more than low authoritarian receivers when a high credibility source presents a persuasive communication may apply only when the communication is unequivocal, but not when the communication is ambiguous. In other words, message ambiguity may turn

out to be a limiting condition on the relationship between a high credibility source and authoritarianism as regards attitude change. One of the purposes of this study is to determine the nature of this relationship when the persuasive communication is relatively ambiguous.

## II

## METHODOLOGY

Subjects

A total of 280 female students attending Brooklyn College served as subjects in the investigation. These students were recruited from Introductory courses in Psychology, Biology, or Political Science. Their ages ranged from 16 to 27 years, with 82 percent between 18 and 21 years (Only two were 27 years old).

Experimental Design

A 3x2x2 factorial design was used to test the hypotheses. There were three levels of source credibility: high, low, and an anonymous source; two levels of message or communication ambiguity: unequivocal and ambiguous; and finally, two levels of authoritarianism: high and low. There were, then, 12 experimental conditions, to which was added a no communication control group.

Following classification with respect to authoritarianism, the Ss were randomly assigned to the experimental and control conditions. Of the 140 Ss classified as high authoritarians, 20 were randomly assigned to each of the 6 experimental conditions requiring high authoritarians, and to the one control group. Of those 140 Ss classified as low authoritarians, again, 20 were randomly assigned to the 6 appropriate experimental conditions, and to the one control group. In other words, each of the 12 experimental conditions had 20 Ss, and the control group was composed of 40 Ss, half of whom were high authoritarians, and the other half low authoritarians.

### Manipulation of Experimental Variables

The target issue was the danger of brushing one's teeth often. The persuasive communication advocated the counternorm position that people should not brush their teeth as often as they think they should.

#### 1. Source Credibility

The high credibility source was a dental surgeon identified as a member of the President's Advisory Council on Public Health. S was told that the high credibility source publishes extensively in a number of dental and medical journals, and that the persuasive communication is an excerpt from a long article published by him in the International Journal of Dental Hygiene.

The low credibility source was an assembly worker in a tool-making factory. S was told that, from time to time, the low credibility source likes to write brief articles on health, and that occasionally an article is accepted by the Factory's Newsletter.

The anonymous source was simply "another person".

#### 2. Message Ambiguity

Message ambiguity was manipulated in the following manner. Both unequivocal and ambiguous communications presented pro and con arguments with respect to the attitude object. The only difference between these two communications was that the unequivocal communication explicitly stated its recommendation, whereas the ambiguous communication did not.

The communication read as follows:

One of the causes of tooth decay is a general class of oral bacteria commonly known as "decay bacteria". A certain amount of these bacteria are found in the human mouth at all times. However, the heaviest concentration of these bacteria occur after eating. Some doctors and dentists have recommended brushing one's teeth after meals to counteract this concentration of bacteria after eating. There have also been claims that regular tooth brushing reduces tooth decay. A few doctors and dentists consider brushing one's teeth as being more important today because of the rich diet we consume. One should clearly keep in mind, however, the side effects of brushing one's teeth regularly. Frequent brushing wears away the enamel sheath. The enamel sheath is a protection against tooth decay provided to us by nature. A major cause of tooth decay is enamel deficiency. Frequent tooth brushing damages the gums. We often cause our gums to bleed when we brush our teeth. These injuries increase the likelihood of gum infection. It has been found that a common cause of gum infection is injury inflicted during tooth brushing. Also, a recent investigation found that a group of people who brush their teeth often have as many cavities as a group who brush their teeth occasionally.

(The next paragraph appeared in the unequivocal communication only).

Considering the side effects of frequent tooth brushing and some up-to-date evidence on this matter, I recommend that we should not brush our teeth after every meal.

Our aim was to construct a persuasive communication that would be perceived as being against frequent tooth brushing even when the recommendation was not made explicit. Consequently, we deliberately made the anti-brushing arguments stronger. In other words, we attempted to construct two communications that would differ primarily with respect to the range of interpretations that can be given to the communication, even though most interpretations would fall on the anti side of the attitude continuum. Our expectation was that the unequivocal communication would be interpreted as being either strongly or very strongly against frequent tooth brushing, whereas the ambiguous communication would range from mildly to very strongly against frequent tooth brushing.

The pretests of these communications, as presented in Appendix E, justified labelling one communication as being relatively more ambiguous than the other.

### 3. Authoritarianism

The F-scale developed by Christie, Havel and Seidenberg (1958) was used to measure the degree of authoritarianism in the receiver. This form of the F-scale consists of 20 items; as employed in the present study, scores could range from 20 to 100.

The F-scale was administered to 415 students. Those students scoring within the top third of the distribution of F-scores were classified as high authoritarians, and those scoring within the bottom third were classified as low authoritarians. Specifically, Ss scoring 55 and above were classified as "high" authoritarians, and Ss scoring 47 and below, were classified as "low" authoritarians.

For the sake of exposition we will refer to these two groups as "high" authoritarian and low authoritarian, respectively.

### Experimental Procedure

Three experimental booklets were necessary for the execution of the study. One booklet was titled, Public Opinion Poll, and measured the S's before-attitude towards the target issue, and her level of authoritarianism. A second booklet titled, A Study of Empathy, exposed the S to the unequivocal or ambiguous persuasive communication, which was attributed to a high credibility, low credibility, or anonymous source; there were other questions and tasks asked of the S in this booklet, which will be described

in the sections that follow. The third booklet, titled, College Opinion Survey, measured the S's after attitude towards the target issue. Finally, a Post-Experimental Questionnaire was administered.

The experimental procedure is outlined below, and described in detail in the sections that follow.

#### Outline of Experimental Procedure

Session I: Public Opinion Poll (Appendix A)

- A. Measure of Authoritarianism
- B. Before Communication Attitude
- C. Background Information

Session II, Part I: A Study of Empathy (Appendix B). 2 to 4 weeks after Session I.

- A. Exposure to Communication
- B. Placement of Communication
- C. Certainty and Clarity Ratings
- D. Perceived Credibility Ratings
- E. Situation Test - Measure of Source-Orientation

Session II, Part II: College Opinion Survey (Appendix C)

- A. After Communication Attitude
- B. Post-Experimental Questionnaire
  - 1. Perceived Validity Ratings
  - 2. Recall of Communication Arguments
  - 3. Question on Purpose of Study

The study was conducted in two sessions. For the experimental and

control Ss, the Public Opinion Poll was administered in the first session. In the second session, two to four weeks later, the booklets, A Study of Empathy, The College Opinion Survey, and the Post-Experimental Questionnaire, in that order, were administered to the experimental Ss. The order of booklets for the control Ss, in the second session was, College Opinion Survey, Study of Empathy, and Post-Experimental Questionnaire.

In other words, the experimental design required that the experimental S's before attitude be measured first, followed, after a lapse in time, by exposure to the persuasive communication, and finally, the measure of his after communication attitude. In contrast, the order for the control S was: before attitude, after attitude, and then the persuasive communication.

As indicated above the study was conducted in two sessions, and also required three different experimenters.

The first session took place in the first week of April 1968. El administered to large sections of Introductory Psychology, Biology, and Political Science, the F-scale and the before measure towards the issue of brushing teeth often, under the guise of a Public Opinion Poll.

After introducing himself, El asked the Ss to carefully read the instructions in the booklet, and to raise their hands if they had any questions.

The S read the following instruction:

We are studying how people think and feel about a number of important social, personal, and health-related questions.

This study will be useful only if you answer honestly. Please cooperate.

The first part of the Public Opinion Poll consisted of the 20-item, F-scale. The second part of the Poll, consisted of 20, health-related items, 4 of which dealt with the issue of brushing teeth. The positions of these 4 items were determined by a random procedure that placed them in the second part of the poll in the positions, 3, 5, 8, and 12. Finally, the S was asked to give background information including his name, address, and telephone number. The complete Public Opinion Poll is presented in Appendix A.

From a pool of 415 female students, 280 were selected to serve as Ss, following classification with respect to the degree of authoritarianism. These Ss were then randomly assigned to the appropriate experimental and control groups as described earlier.

Two to four weeks after the first session, the Ss were contacted by phone by the "secretary" of E2. The secretary was female and she said the following to the S:

I am Miss Wolf, and I am calling for Dr. Goldberg of the Department of Psychology at Brooklyn College. You have been selected to be a subject in a study Dr. Goldberg is conducting.

The secretary then suggested a date to the S. If the S hesitated or refused, the secretary assured the S that the study was not an I. Q. test, achievement, or personality test. If the S still hesitated, the secretary added that the study was like a survey type of investigation. In all instances she stressed the importance of their keeping the appointment.

The decision to call a given S for a given date followed a random

procedure. However, some rescheduling was unavoidable.

The second session started in the first week in May of 1968 and lasted two weeks. The Ss were run in groups of 5 to 25. As indicated, the appointments for a given day and hour followed as closely as possible a random procedure. Thus in a given group there were usually Ss from different experimental conditions, and Ss from the control condition. Each S received the booklet appropriate to the condition to which she was assigned.

E2 introduced himself to the Ss and told them the following:

Thank you for coming. I am Dr. Goldberg and I teach at Brooklyn College. The instructions for the study are in the booklets which I shall soon pass out. If you have any questions, just raise your hand.

We have some problems getting students to serve as subjects in psychological studies. So, because my study is very brief, I have agreed that my colleague, Dr. Barazani from New York University, may ask you to serve as subjects in a study of his own. There is no connection between the two studies. So when you finish with my study, go to Dr. Barazani, and he will tell you what he wants you to do.

E2 then presented to the experimental S the appropriate booklet, titled A Study of Empathy; the S's name appeared on the front page of the booklet.

If S was in the high credibility condition, she read the following instructions:

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is an excerpt from an extensive article written by Dr. Newland and published in the International Journal of Dental Hygiene. Dr. Newland is a dental Surgeon, and a member of the Advisory Council to the President of the

United States on Public Health. Dr. Newland is a frequent contributor of articles to various scientific journals.

Read this excerpt on the next page and then answer the questionnaire following it as if you were Dr. Newland. This is not an easy task. Just do your best.

If S was in the low credibility condition, she read the following instructions:

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is a brief article written by Mr. Newland and published in the health column of the Factory's Newsletter. Mr. Newland is an assembly worker in a tool-making factory. Mr. Newland, from time to time, likes to write articles on health, and occasionally one of these articles is accepted by the Factory's Newsletter, which is published monthly at the factory plant.

Read this article on the next page, and then answer the questionnaire following it as if you were Mr. Newland. This is not an easy task. Just do your best.

If S was in the anonymous source condition, she read the following instructions:

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is a statement made by a person. Read this statement, and then answer the questionnaire following it as if you were this other person.

Read this statement on the next page and then answer the questionnaire following it as if you were this other person. This is not an easy task. Just do your best.

The experimental Ss then read a communication dealing with the care of teeth, which presented arguments favoring frequent tooth-brushing,

and also arguments which suggested that one should not brush his teeth as frequently as people think they should. The arguments against brushing teeth often, as shown by pilot studies, were stronger than the arguments favoring tooth-brushing.

If S was assigned to the unequivocal communication condition, she read, in addition, an explicit recommendation that people should not brush their teeth after every meal. If S was assigned to the ambiguous communication condition, she did not read the explicit recommendation, i. e., the communication ended after listing the arguments against brushing teeth often.

Following exposure to the persuasive communication, the S was asked to place the communication, i. e., to answer a 4-item questionnaire on the issue of brushing teeth often, as she thought the source of the communication had answered this questionnaire himself. These 4 items were the same as those used in the Public Opinion Poll in the first session.

Following the placement of the communication, the S was asked to indicate on 11-point rating scales, how certain she felt that the source had answered the items as she suggested; how clear the source was in stating his position on the issue; how qualified the source was to speak on matters of dental health, and to what extent the author of the communication was a trustworthy source of information on matters of dental health.

The last task in the booklet, A Study of Empathy, was a measure of source-orientation labelled a Situation Test, which was developed by

Schroder and Hunt (1958). The purpose of this measure was to test our assumption that authoritarian receivers tend to give more weight to the characteristics of the source when evaluating a communication. The materials used in the Study of Empathy are presented in Appendix B.

When the S finished she returned the booklet to E2 and went over to Dr. Barazani, E3.

E3 informed the S that he was conducting a College Opinion Survey, and gave a booklet to the S, whose name appeared on the first page.

The S read the following instructions:

There is a current movement in the colleges throughout the United States which advocates a greater degree of student power. This movement has stimulated renewed interest in the opinions of the college student on all kinds of issues. This is a survey of how college students think and feel about a number of important social, personal, and health-related questions.

The College Opinion Survey consisted of a 30-item questionnaire, and most of the items were different from those of the Public Opinion Poll which was administered in the first session. The four items on brushing teeth were the same for both College Opinion Survey and Public Opinion Poll.

For the experimental Ss, the post-experimental questionnaire was the last part of the booklet for the College Opinion Survey. The post-experimental questionnaire consisted of 5 questions. Question 1 asked the S to describe any thought she had while answering the College Opinion Survey. Question 2 asked the S to indicate on an 11-point rating scale the extent to which she felt the arguments presented in the communication

on brushing teeth, were true or valid. Question 3 asked the S to indicate on an 11-point rating scale the extent to which she felt that the recommendation made in the communication was justified by the facts it presented. Question 4 asked S to describe as many arguments or points she remembered from the communication on brushing teeth. Question 5 asked the S to guess the purpose of the studies in which she participated.

The booklet for the College Opinion Survey is presented in Appendix C.

The order of instruments for Ss in the control group was as follows: Public Opinion Poll, College Opinion Survey (without the Post-Experimental Questionnaire), Study of Empathy, and Post-Experimental Questionnaire.

In order to determine whether the credibility attributed to the high and low sources on the part of the experimental Ss would be affected by the association between these sources and the counternorm communication, the control Ss were asked to rate the credibility of the high and low sources before these sources became associated with the communication. Immediately preceding the booklet entitled Study of Empathy, some of the control Ss were given a description of Dr. Newland, and other control Ss were given a description of Mr. Newland. The control Ss were then asked to indicate the extent to which the source is qualified to speak on matters of dental health, and the extent to which the source is a trustworthy source of

information on matters of dental health. The materials for this additional task for the control Ss are presented in Appendix D.

Following the completion of "both studies" in the second session, E2 debriefed the Ss and explained why it was necessary to hide the true purpose of the study.

#### Measurement Techniques

1. Source Credibility: To check our manipulation of source credibility, the S was asked to indicate on 11-point rating scales, the extent to which the source was qualified to speak on matters of dental health, and the extent to which the source was trustworthy as a source of information concerning matters of dental health (See Appendix B). The sum of the S's ratings on both questions yielded a measure of perceived credibility of the source. Thus, the range of perceived credibility scores was from 2 to 22, and the higher the score the greater the degree of perceived credibility.

2. Message Ambiguity: There were three indices to check our manipulation of message ambiguity. One index dealt with the extent of disagreement or variability in the interpretation of the persuasive communication. To obtain a measure for this index of message ambiguity, the S was asked to answer the questionnaire on brushing teeth as she thought the source himself answered the questionnaire, i. e., the S was asked to place the communication (see Appendix B). The expectation was that the variability of placement of the ambiguous communication will be greater than the variability of placement of the unequivocal com-

munication.

The second index of message ambiguity dealt with the S's confidence or certainty about his placement of the communication. The S was asked to indicate on an 11-point rating scale, ranging from 0 to 100, the extent to which she felt certain the source answered the questionnaire on brushing teeth as she indicated (see Appendix B). The higher the score the greater the S's certainty about his placement of the communication. We expected that the S will feel less certain about the placement of the ambiguous communication, as compared to the placement of the unequivocal communication, i. e. , the more ambiguous the situation, the less certain one is about his interpretation of that situation.

For the third index of message ambiguity, the S was asked to indicate on an 11-point rating scale, ranging from 1 to 11, the extent to which she felt the source was clear in stating his own position on the question of brushing teeth after meals (see Appendix B). The higher the score, the greater the perceived clarity of the source's explicitness as regards his position on the issue of brushing teeth often. We expected that the perceived clarity of the source's statement of his own position on the issue should be smaller for the ambiguous communication, as compared to the unequivocal communication.

3. Authoritarianism: The 20-item, F-scale developed by Christie, Havel and Seidenberg (1958), was used to measure authoritarianism. Ten of the items in this scale are keyed so that agreement reflects authoritarianism, and for the other ten items, disagreement reflects authoritarianism

(see Appendix A).

There were four response categories for each item, viz., agree very much, agree a little, disagree a little, disagree very much. If the item was one where the authoritarian person was expected to agree with the item, the weights for the four response categories, in the order presented above, was as follows: 5, 4, 2, 1. If the authoritarian person was expected to disagree with the item, the score weights were reversed: 1, 2, 4, 5. If the S did not answer an item, a score of 3 was assigned for that item. The sum of the weights for all 20 items, yielded the F-score for a given S. Thus, a score of a 100 reflects the highest degree of authoritarianism, and a score of 20, the lowest degree of authoritarianism.

The Ss indicated their answers to the F-scale on I. B. M. answer sheets, which were then machine-scored.

4. Source-Orientation: We made the assumption that the high authoritarian person is more source-oriented than the low authoritarian person, i. e., the authoritarian person tends to be more influenced by the characteristics of the source of a persuasive communication when evaluating the content of that communication. In order to test this assumption, the measure of source-orientation developed by Schroder and Hunt (1958) was administered to the Ss (see Situation Test). The S was asked to imagine that she is working on some project. She is then confronted with disapproval by another person. For example,

As you are working \_\_\_\_\_ comes in  
and criticizes you, indicating that it looks as  
if you are not doing very well.

The blank is filled by a liked source for six of the items, and by a disliked source for another six items. These sources are personally liked and disliked by the S, i. e., she herself indicated to the E three liked sources, and three disliked sources.

Following each disapproving item, the S chooses one of the following two alternatives,

- a) It could be that I am not doing well enough.
- b) It could be that I am doing well enough.

If S chooses the first alternative, he is said to have devalued himself. The scoring is in terms of self-devaluation. Thus, six is the maximum score for each type of source.

The greater the difference between self-devaluation given a liked source and self-devaluation given a disliked source, the greater the degree of source-orientation. Hence, a person who obtains a self-devaluation score of six, given a liked source, and a self-devaluation score of two given a disliked source, is more source-oriented than an S who obtains a self-devaluation score of six for both types of sources, i. e., the difference for the first S is four, whereas for the second S it is zero. The range of source-orientation scores is from 0 to 6.

The implicit rationale for this instrument is that the extent to which a source-oriented person accepts criticism from another is a function of the characteristics of this other person.

There is some "construct" validity for the above measure of source-orientation. Schroder and Hunt (1958) predicted that in a conformity type

of situation where one's judgment is discrepant from that of the group's, those Ss who tend to conform at high levels of discrepancy will be more source-oriented than those Ss who tend to conform at low levels of discrepancy. This prediction was confirmed by the results.

5. Perceived Validity: This measure was obtained by having S indicate on 11-point rating scales, the extent to which the arguments presented in the communication are true or valid, and the extent to which the recommendation made by the source is justified by the facts he presented (see Appendix C). The sum of both ratings yielded the measure of perceived validity of the persuasive communication. The range of the scores is from 2 to 22, and the higher the score the greater the degree of perceived validity.

6. Attitude Change: The S indicated her before attitude when she answered the Public Opinion Poll. Two to four weeks later, she was exposed to the persuasive communication, and immediately following that, the S indicated her after attitude in the College Opinion Survey.

The following four items were used to measure the S's attitude towards brushing teeth often:

1. Brushing one's teeth can become a harmful practice, if one does it often.
2. The best way to prevent tooth decay is to brush one's teeth frequently.
3. There are disadvantages to brushing one's teeth too often as well as never brushing them.
4. Everyone should brush his teeth after every meal if at all possible.

Half of the items are worded in a favorable direction (2 and 4), and half in an unfavorable direction (1 and 3). Each item was followed by a 15-point scale, where 1 stands for Disagree Strongly, and 15 for Agree Strongly. The items were scored so that a low score indicates a favorable position with regard to brushing teeth often. An S's attitude score was based on the sum of her ratings on all four items. A score of 4 indicates that S is most favorable towards the issue, and a score of 60, most unfavorable. A score of 32 may be said to reflect a "neutral" position.

The difference between the after measure and before measure yielded an index of attitude change. A positive value indicates that S changed in the direction advocated by the communication. A zero difference means that no change occurred. A negative value indicates that S changed in the direction opposite to that advocated by the communication.

7. Assimilation-Contrast: In general, we need three measures to determine whether an S is assimilating or contrasting the position being advocated by the communication, to wit, the S's before attitude, the S's placement of the communication, and the "true" position of the communication, to be defined shortly. If the S interprets or places the communication closer to her before attitude than it actually is, i. e., as compared to the distance between the S's before attitude and the true position of the communication, the S is said to be assimilating. On the other hand, if the S places the communication further away from her before attitude than it actually is, as compared to the distance between the before atti-

tude and the true position of the communication, the S is said to be contrasting.

The S's before attitude on the issue of brushing teeth was obtained when she answered the Public Opinion Poll. To obtain a measure of S's placement of the communication, S was asked to answer the 4-item attitude scale on brushing teeth as she thought the source of the communication answered that questionnaire himself (see Appendix B).

We could not devise an objective index for the "true" position of a persuasive communication. However, our primary purpose was to investigate the effects of source characteristics on the interpretation or placement of a persuasive communication. Consequently, we operationally defined the true position of the communication as that interpretation given to the communication when an anonymous source is associated with the communication. In other words, when the placement of the persuasive communication is primarily determined by the content of that communication. This condition was met in those experimental treatments where the source was anonymous. Some of our experimental groups were exposed to the unequivocal communication presented by the anonymous source. The mean placement of this communication yielded the index for the true position of the unequivocal communication. Similarly, the Ss' placement of the ambiguous communication associated with the anonymous source, yielded the index for the true position of the ambiguous communication.

Pilot work has indicated that the Ss' before attitude falls on the favorable side in the attitude continuum as regards brushing teeth often;

the Ss' mean before attitude in these pilot studies was 18.15. Pilot studies also indicate that both ambiguous and unequivocal communications, when associated with an anonymous source, are placed on the unfavorable side of the attitude continuum. In other words, the Ss' mean before attitude is favorable towards brushing teeth often, and the true position of both ambiguous and unequivocal communications tend to be perceived as falling on the unfavorable side as regards brushing teeth often.

Inasmuch as the before attitude of the Ss tended to be the same, it was decided that in order to determine whether a given experimental group was assimilating or contrasting, all that was needed was to compare that group's mean placement of the communication with the true position of the communication. In other words, all that was necessary was the comparison between the mean placement of the communication on the part of Ss exposed to high or low credibility sources and the mean placement of the communication on the part of those Ss exposed to the anonymous source.

If a group's placement of the communication yields a score lower than the score of the true position of that communication, we would have a case of assimilation, i. e. , the communication was perceived as being more favorable than it actually is with respect to brushing teeth often. On the other hand, if a group's placement of the communication yields a score greater than the score of the true position of the communication, we would have a case of contrast, i. e. , the communication was perceived as being more unfavorable towards the issue than it actually is. Furthermore, the

lower the mean placement of the communication, as compared to its true position, the greater the degree of assimilation, and the higher the mean placement of the communication, the greater the degree of contrast.

8. Learning: As we presented earlier, Hovland et. al., claim that the effects of source credibility on the amount of attitude change following a persuasive communication, is mediated by the psychological process of acceptance of the recommendations made by the communication. Furthermore, that the variable of source credibility does not affect the psychological processes of attention and learning or comprehension of the communication, at least in the laboratory setting. In order to determine whether there was a difference in learning or comprehension of the communication among the various experimental groups, the S was asked to recall as many points that were made in the communication (see Appendix C). A weight of 1 was assigned to every correct point the S recalled. The sum of these weights yielded the measure of learning or comprehension of the communication for a given S.

The maximum number of points that could be recalled is 15, i. e., each sentence in the persuasive communication can be said to provide one point of information. Thus if the S wrote the following, "Frequent brushing wears away the enamel. Enamel is a protection against decay. Brushing makes the gums bleed", she received a learning score of 3.

## III

## RESULTS

Forty-four of the original 280 students selected to serve as subjects, either refused to come or did not keep the appointment for the second session. The subject loss rate was approximately the same for all experimental and control conditions. In order to fill the experimental and control cells, the Public Opinion Poll was administered to an additional section of Introductory Biology. The students of this new pool of subjects who were classified as high authoritarians or low authoritarians were then randomly assigned to the experimental and control cells with missing subjects.

Efficacy of Experimental Manipulations

1. Source Credibility: As a check of our manipulations of source credibility, the S was asked to indicate the extent to which the source was qualified to speak on matters of dental health, and the extent to which he was a trustworthy source of information (see Appendix B). The correlation between these two ratings was statistically significant ( $r = .91$ ,  $p < .01$ ). The S's ratings on these two scales were thus combined to yield a measure of perceived credibility of the source. The scores could range from 2 to 22, and the higher the score the greater the degree of perceived credibility.

The mean ratings of credibility attributed to the three sources on the part of the experimental groups are presented in Table 1, and the analysis of variance is presented in Table 2.

Table 1

Mean Credibility Rating of the Source  
of the Communication  
(N = 20 in each cell)

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	5.65	8.00	19.45
	Ambiguous	6.45	9.95	19.70
Low Authoritarian	Unequivocal	6.10	9.80	18.80
	Ambiguous	7.20	9.45	19.30
		6.35 (80)	9.30 (80)	19.31 (80)

Table 2

Analysis of Variance of Perceived Credibility  
of the Source of the Communication<sup>a</sup>

Source	SS	df	MS	F	p
Source Credibility (A)	7386.11	2	3693.05	230.95	< .01
Message Ambiguity (B)	30.10	1	30.10	1.88	
Authoritarianism (C)	3.50	1	3.50		
A x B	3.56	2	1.78		
A x C	17.66	2	8.83		
B x C	5.11	1	5.11		
A x B x C	22.11	2	11.05		
Within	3646.15	228	15.99		
Total	11114.30	239			

<sup>a</sup>The Mean Square Within was taken as the error term. That is, we considered the levels of each factor as "effectively" fixed (cf. Winer, 1962).

As shown in Table 2, the only significant result was the main effect of source credibility. As can be seen from Table 1, the high credibility source, Dr. Newland, is perceived as the most qualified and trustworthy source (19.31), the anonymous source is given the next highest rating on perceived credibility (9.30), and the low credibility source, Mr. Newland, has the lowest credibility rating (6.35).

A difference between two means is statistically significant if it is equal to or greater than 1.42 (Tukey's test, cf. Winer, 1962). All of the above three means are significantly different from each other.

It should be pointed out that the rating of the anonymous source fell on the negative side of the continuum of perceived credibility, i. e., the credibility ratings could range from 2 to 22, thus the midpoint of the scale is 12.

Since there were no interaction effects, we expected that the above pattern of results would hold when we consider each communication condition separately. This was indeed found to be the case. Following Tukey's procedure for comparing pairs of means, we found that the high source was perceived as being more credible than the anonymous and low sources, and the anonymous source was perceived as being more credible than the low source, when the communication was ambiguous and when the communication was unequivocal.

It can be said, then, that we were successful in the manipulation of source credibility when the communication was unequivocal and when it was ambiguous.

As described in the methodology section, the control Ss rated the expertness and trustworthiness of the high or low source before these sources became associated with the persuasive communication. For the control group, the mean credibility rating of the high source was 20.40, and for the low source the mean was 4.10. The control Ss attributed a greater degree of credibility to the high source than to the low source ( $t = 22.02$ , 38 d.f.,  $p < .05$ ).

We next compared the mean credibility rating of the high source among the control group, the unequivocal communication condition, and the ambiguous communication condition. The mean credibility rating of the high source was 19.12 when the communication was unequivocal, 19.50 when the communication was ambiguous, and for the control group the mean was 20.40. The difference among these means was not statistically significant. It can be said, then, that the degree of credibility attributed to the high source, Dr. Newland, was the same whether the ratings were made before or after the high source became associated with the counternorm communication.

The mean credibility rating of the low source was 5.87 when the communication was unequivocal, 6.82 when the communication was ambiguous, and for the control group the mean was 4.10. The difference between the control group and the unequivocal communication condition was significant ( $t = 2.21$ , 58 d.f.,  $p < .05$ ), and the difference between the control group and the ambiguous communication condition was also significant ( $t = 3.16$ , 58 d.f.,  $p < .05$ ).

Thus, we see that the perceived credibility of the low source is affected when that source becomes associated with the persuasive communication, i. e. , the low source was perceived as being relatively more credible when he was associated with the counternorm communication, as compared to the credibility attributed by the control Ss to the same low source before he became associated with the communication. A possible reason as to why this occurred is that the control group was only given a brief description of the low source, a factory worker, and was then asked to rate the credibility of the low source as regards matters of dental health (see Appendix D). This rating may be said to represent the Ss' perception of the credibility of an "average" factory worker. The experimental groups, on the other hand, rated the credibility of the low source after the latter became associated with an organized and well-written statement. This very connection between the low source and the communication may have led the experimental Ss to attribute characteristics to that source which placed him above the average factory worker.

This last finding, however, in no way affects our manipulation of source credibility, i. e. , the experimental Ss still attributed less credibility to the low source than to the anonymous and high sources.

As stated earlier, the credibility attributed to the high source did not increase when the high source became associated with the persuasive communication. A possible reason for this finding is that one generally expects that a high source would articulate organized and well written statements. Consequently, the receivers did not modify their credibility

ratings of the high source when the latter became associated with a well-organized communication.

The above pattern of results is contrary to the expectations and findings derived from congruity theory (Osgood and Tannenbaum, 1955; Tannenbaum, 1956). Tannenbaum (1956), for example, found that the S's evaluation of the source decreases after the source presents a communication advocating a position which is discrepant from the S's own position on the issue.

2. Message Ambiguity: Both the ambiguous and unequivocal communications presented supporting and opposing arguments with respect to brushing one's teeth often. The only difference between the two communications was that the unequivocal communication explicitly stated the recommendation that one should not brush after every meal, whereas the ambiguous communication did not make this recommendation explicit.

These communications were pretested in order to determine whether one communication was indeed more ambiguous than the other. The following criteria were chosen to determine whether these two communications differed with respect to the degree of message ambiguity: (1) There should be greater variability in the interpretation of the ambiguous communication as compared with the interpretation of the unequivocal communication; (2) And there should be less certainty about one's interpretation of the ambiguous communication as compared with the unequivocal communication, i. e., the more ambiguous the situation the less certain one is about his interpretation of that situation; (3) And finally, the unequivocal communi-

cation should be evaluated as being clearer in stating its position on the issue than the ambiguous communication.

As reported in Appendix E, all three criteria of degree of message ambiguity were met in the pretests, i. e., those Ss exposed to the ambiguous communication gave a wider variety of interpretation to that communication than was the case with the unequivocal communication; the Ss exposed to the ambiguous communication felt less certain about their interpretation of that communication than the Ss exposed to the unequivocal communication; finally, the Ss exposed to the ambiguous communication attributed a lesser degree of clarity to that communication than was the case with the unequivocal communication.

A check of the manipulation of message ambiguity was also done in the main study. Following the communication, the S was asked to answer the four-item questionnaire on brushing teeth, as she thought the source himself had answered the questionnaire (see Appendix B). That is, the S was asked to interpret the communication. For the sake of convenience we will call the task of interpreting the communication as "placement" of the communication.

As indicated in the methodology section, the score of communication placement could range from 4 to 60, and the higher the score the more opposed the communication is perceived to be with respect to brushing teeth often.

Following placement of the communication, the S was asked to indicate on an 11-step rating scale ranging from 0 to 100, how certain she

felt that the source answered the questionnaire as the S had indicated. Finally, the S was asked to indicate on an 11-point rating scale the extent to which the communication clearly stated its position on the issue (see Appendix B).

The results for the three criteria of message ambiguity are presented in Table 3.

Table 3

Measures Reflecting the  
Degree of Message Ambiguity

<u>Measure</u>	<u>Communication</u>			p
	Ambiguous	Unequivocal		
M	44.30	53.79	t = 8.70	< .01
Placement: $s^2$	123.59	45.71	F = 2.70	< .01
Range	10 - 60	35 - 60		
Certainty: M	61.07	73.07	t = 5.71	< .01
Clarity: M	5.45	9.01	t = 12.71	< .01
N	140	140		

As can be seen in Table 3, all three criteria for degree of message ambiguity were met. The variance of placement,  $S^2$ , for the ambiguous communication is significantly greater than that for the unequivocal communication. Also, the range of placement for the ambiguous communication is greater than that for the unequivocal communication. We also

found that the receivers exposed to the ambiguous communication feel significantly less certain about their placement of the communication than receivers exposed to the unequivocal communication. Finally, the receivers exposed to the ambiguous communication perceived that the source was less clear in stating his position on the issue than the receivers exposed to the unequivocal communication.

On the basis of the evidence presented, it can be said that we were successful in establishing two communications that differ with respect to message ambiguity.

As shown in Table 3, the unequivocal communication is perceived as being more unfavorable towards brushing teeth often (53.79), than is the ambiguous communication (44.30). However, both communications are placed above the neutral point of 32, i. e. , on the unfavorable side of the attitude-continuum. More importantly, both communications are perceived as being more unfavorable towards the issue than the receivers' before attitude towards brushing teeth often. The mean before attitude for the receivers exposed to the ambiguous communication was 18.40, and for the receivers exposed to the unequivocal communication the mean before attitude was 17.98.

Thus, we see that we were successful in the manipulation of message ambiguity. That is, both communications were generally perceived as being opposed to frequent tooth-brushing, but the intensity of this unfavorable position received a greater number of interpretations when the communication was relatively ambiguous.

3. Authoritarianism: According to the way the response to the F-scale items were weighted, a score of 20 reflects the lowest degree of authoritarianism, a score of 100 the highest degree of authoritarianism, and a score of 60 can be considered the neutral point in the range of possible F-scores. Of the total pool of 415 female Ss, the top third of the F-score distribution was classified as high authoritarians, and the bottom third as low authoritarians. Those Ss classified as High Authoritarians ( $F \geq 55$ ), and those classified as Low Authoritarians ( $F \leq 47$ ), were then randomly assigned to the appropriate experimental and control conditions. The measures of central tendency and variability for the total pool of Ss, and for the high and low groups are presented in Table 4.

Table 4

The Distribution of F-scores  
for the Total Sample, and  
for the High and Low Groups

<u>F-score Distribution</u>	<u>Group</u>		
	High	Low	Total
M	62.82	34.90	51.40
s	4.48	4.49	9.23
Range	55 - 76	20 - 47	20 - 76
N	140	140	415

The mean for the total sample, 51.40, is below the neutral score of 60, i. e., on the non-authoritarian side of the F-distribution. This,

however, is consistent with the findings of Christie, Havel and Seidenberg (1958), that, on the average, college samples tend to score below the neutral point of the F-distribution.

As shown in Table 4, the mean F-score for the low group is 34.90, and for the high group the mean is 62.82, which is near the neutral point. Strictly speaking, then, it cannot be said that we have isolated a group which is "high" with respect to authoritarianism. All that can be said, then, is that we have isolated two groups that differ with respect to the degree of authoritarianism.

Unfortunately, Harvey and Beverly (1961), and Wagman (1955), who investigated the interaction between source credibility and authoritarianism with respect to attitude change, did not report the F-scores of their high and low authoritarian groups. These investigators, however, did employ college samples in their respective studies. In light of this information, and since there is a difference in degree of authoritarianism between the high and low groups in the present study, we felt justified in using these two groups for testing our hypotheses. For the sake of convenience, we will refer to these two groups as High Authoritarian and Low Authoritarian, respectively.

One of the assumptions made about the high authoritarian person is that he is relatively more source-oriented than the low authoritarian person when evaluating communications. To test this assumption, a measure of source-orientation, the Situation Test, was administered to all of the Ss (see Appendix B). As described in the methodology section,

the higher the score, the greater the degree of source-orientation. High authoritarian receivers obtained a mean source-orientation score of 2.75, and low authoritarian receivers obtained a mean of 2.80. The difference between these two means is not statistically significant. The correlation between these two measures is also not statistically significant ( $r = .02$ ). It is possible, however, that the Situation Test is not a sensitive enough instrument to detect a difference in the degree of source-orientation between the high authoritarian and low authoritarian receivers that were used in this study.

In order to determine which statistical analysis would be appropriate for the test of our hypotheses, we compared the before attitude on the part of high authoritarians with the before attitude on the part of low authoritarians. The mean before attitude on the part of these two groups were 15.77 and 19.45, respectively. The difference between the two means is not statistically significant.

4. Effectiveness of Experimental Procedure to Disguise Purpose of Study: Forty-one of the 240 experimental Ss suspected that the study had "something" to do with changing opinions. Of these, 20 Ss were high authoritarians and 21 Ss were low authoritarians. These Ss were, more or less, equally distributed across the experimental conditions. The mean before attitude of these 20 high authoritarian Ss was 16.88, and for the 21 low authoritarian Ss the mean was 18.96. The corresponding means for the before attitude for the Ss who did not suspect the true purpose of the study were 15.61 and 19.57, respectively. The differences among

these four means are not statistically significant.

### Test of Hypotheses

1. Perceived Validity: Early in the formulation of the problem, we predicted that a persuasive communication associated with a high source would be perceived as being more valid than when the same communication was associated with a low source (Hypothesis 1). At a later point, we also predicted that when the source was of high credibility, high authoritarian receivers would perceive the communication as being more valid than low authoritarian receivers (Hypothesis 5). Conversely, when the source was of low credibility, high authoritarian receivers would perceive the communication as being less valid than low authoritarian receivers (Hypothesis 7). All of the above hypotheses were expected to obtain regardless of the degree of message ambiguity.

The measure of perceived validity was obtained by having S rate the extent to which the communication arguments are true or valid, and the extent to which the recommendation made by the communication is justified by the facts it presented (see Appendix C). The correlation between these two ratings was statistically significant ( $r = .68, p < .01$ ). The S's ratings on both scales were thus combined to yield a measure of perceived validity. The scores could range from 2 to 22, and the higher the score the greater the degree of perceived validity.

The mean validity attributed to the communication as a function of source credibility, message ambiguity, and authoritarianism are presented in Table 5, and the analysis of variance is presented in Table 6.

Table 5

Mean Validity Attributed to the Arguments  
of the Communication  
(N = 20 in each cell)

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	10.00	10.70	17.15
	Ambiguous	12.65	11.75	15.65
Low Authoritarian	Unequivocal	12.90	12.20	16.20
	Ambiguous	13.30	14.70	15.20
		12.21 (80)	12.33 (80)	16.05 (80)

Table 6

Analysis of Variance of Perceived Validity  
of the Communication

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Source Credibility (A)	760.66	2	380.33	23.36	<.01
Message Ambiguity (B)	28.02	1	28.02	1.72	
Authoritarianism (C)	72.60	1	72.60	4.45	<.05
A x B	112.76	2	56.38	3.46	<.05
A x C	99.23	2	49.61	3.04	<.05
B x C	.15	1	.15		
A x B x C	36.92	2	18.46	1.13	
Within	3713.40	228	16.28		
Total	4823.74	239			

As shown in Table 6, the main effect of source credibility was statistically significant. The mean validity rating attributed to the communication when presented by the high source was 16.05, and when presented by the low and anonymous sources, the means were 12.21 and 12.33, respectively (see Table 5). To be statistically significant a difference between two means must equal to or exceed the value of 1.45 (Tukey's test, cf. Winer, 1962).

When the communication was associated with the high source it was perceived as being more valid than when it was presented by the low or anonymous source. There was no difference in perceived validity between the low and anonymous source.

The above pattern of results was also obtained when we considered each communication condition separately.

On the basis of the preceding set of results it can be said that Hypothesis 1 was confirmed, i. e., when a communication is presented by a high credibility source it will be perceived as being more valid than when the same communication is presented by a low credibility source.

As shown in Table 6, however, the interaction effect between source credibility and message ambiguity was statistically significant. The mean validity ratings as a function of source credibility and message ambiguity are presented in Table 7.

Table 7

Mean Validity Attributed to the Communication  
as a Function of Source Credibility  
and Message Ambiguity  
(N = 40 in each cell)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	11.45	11.45	16.67
Ambiguous	12.97	13.22	15.42

As can be seen in Table 7, the difference in mean validity rating between the high source and the other two sources was relatively greater when the communication was unequivocal than the corresponding difference in mean validity ratings when the communication was ambiguous.

The second interpretation of the source credibility by message ambiguity interaction is that when the source was of high credibility, there was a tendency for the unequivocal communication to be perceived as relatively more valid than when the communication was ambiguous; this mean-difference was not, however, statistically significant. The obverse non-significant tendency was also found for the low and anonymous sources.

As can be seen in Table 6, the main effect of authoritarianism, and the interaction effect between source credibility and authoritarianism were also statistically significant. Table 8 presents the mean perceived validity as a function of source credibility and authoritarianism.

Table 8

Mean Validity Attributed to the  
Communication as a Function  
of Source Credibility and Authoritarianism  
(N = 40 in each cell)

<u>Receiver</u>	<u>Source Credibility</u>			Total
	Low	Anonymous	High	
High Authoritarian	11.32	11.22	16.40	12.98 (120)
Low Authoritarian	13.10	13.45	15.70	14.08 (120)

The interaction effect between source credibility and authoritarianism can be interpreted to mean that when the source is anonymous or of low credibility, high authoritarian receivers attribute less validity to the communication than low authoritarian receivers, but when the source is of high credibility the obverse is the case (see Table 8).

The difference between any two means in Table 8 is statistically significant if it is equal to or greater than 2.53 (Tukey's test, cf. Winer, 1962).

The difference in mean perceived validity between high and low authoritarian receivers was not statistically significant when the high source presented the communication. The same was the case when the low source presented the communication. This pattern of results was also obtained when we considered each communication condition separately. Thus, it seems that Hypotheses 5 and 7 received no support from the study, although the results were in the predicted direction.

There was also no difference in mean perceived validity between high and low authoritarian receivers when the anonymous source presented the communication.

A second interpretation of the source credibility by authoritarianism interaction effect is that the difference in mean perceived validity between the high source and the other two sources is relatively greater for the high authoritarian receivers than the corresponding mean differences for the low authoritarian receivers. For example, high authoritarian receivers attribute a mean validity rating of 16.40 to the high source and a mean of 11.32 to the low source (see Table 8). This mean difference of 5.08 points is statistically significant. Low authoritarian receivers, on the other hand, attribute a mean validity rating of 15.70 to the high source, and a mean of 13.10 to the low source. This mean difference of 2.60 points also reaches a level of statistical significance.

Thus, we see that the difference in mean perceived validity as a function of variation in the credibility of the source is greater for high authoritarians as compared to low authoritarians. The rationale for hypotheses 5 and 7 was that high authoritarian receivers would be more affected by variations in the credibility of the source when evaluating a persuasive communication. The finding that the difference in mean perceived validity between the high and low sources was relatively greater for the high authoritarian receivers does lend support to the above rationale. However, as worded, Hypotheses 5 and 7 required simple effects which as stated above were not obtained.

2. Attitude Change: Before proceeding with the test of the hypotheses concerning attitude change, we compared the mean before communication attitude among the experimental groups. The mean before communication attitude for those groups are presented in Table 9.

Table 9

Mean Before Communication Attitude  
for the Experimental Groups

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	16.33	18.07	14.81
	Ambiguous	14.27	13.66	20.13
Low Authoritarian	Unequivocal	18.38	15.50	17.36
	Ambiguous	20.57	18.73	19.57
		17.38 (80)	16.49 (80)	17.81 (80)

By analysis of variance, none of the main effects nor interaction effects were found to be statistically significant, i. e., there was no difference in mean before attitude as a function of source credibility, authoritarianism, and message ambiguity.

On the basis of the above finding, it was decided to use the analysis of variance for testing our hypothesis concerning attitude change. However, as an additional precaution an analysis of covariance was also

conducted (see Appendix F). Since both analyses led to the same statistical conclusions, we will only report the results from the analysis of variance.

The measure of attitude change was obtained by taking the difference between the S's after the communication attitude and the before communication attitude. If the difference between the after measure and before measure was positive, the S changed in the direction advocated by the communication; a zero difference means that no attitude change occurred; and a negative value indicates that the S changed in the direction opposite to that advocated by the communication. With very few exceptions, most Ss changed in the direction advocated by the communication.

The first step in the analysis with respect to attitude change was to determine whether the persuasive communications did indeed change the receiver's attitude in the advocated direction.

The mean attitude change scores for the experimental and control groups are presented in Table 10; the control group answered the "after" attitude measure without being exposed to the persuasive communications.

Table 10

Mean Attitude Change for Six  
Experimental and One Control Groups  
(N = 40 in each group)

<u>Communication</u>	<u>Source Credibility</u>			Control Group
	Low	Anonymous	High	
Unequivocal	9.30	7.35	21.70	1.30
Ambiguous	11.27	8.57	15.12	

By Dunnett's Test (Winer, 1962), a mean difference between a given experimental group and the control group is significant if it is equal to or larger than 6.36. The only experimental group which did not produce more attitude change than the control group was the one where the anonymous source presented the unequivocal communication. Thus, it can be said that with this one exception both unequivocal and ambiguous communications changed the S's attitude in the direction advocated by the communication, i. e., the communications were persuasive.

In the formulation of the problem, we stated that a communication presented by a high source should produce more attitude change than a low source (Hypothesis 2). We also qualified Hypothesis 2 by saying that it may not obtain when the communication is relatively ambiguous. As regards the interaction between source credibility and authoritarianism, we predicted more attitude change on the part of high authoritarians when a high source presents the communication, (Hypothesis 6), and less attitude change on the part of high authoritarians when the source is of low credibility (Hypothesis 8). Furthermore, we qualified Hypothesis 6 by saying it may not obtain when the communication is relatively ambiguous.

The mean attitude change as a function of source credibility, message ambiguity, and authoritarianism are presented in Table 11, and the analysis of variance is shown in Table 12.

Table 11

Mean Attitude Change Following the  
Persuasive Communication  
(N = 20 in each cell)

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	8.85	6.50	25.15
	Ambiguous	12.85	9.70	14.70
Low Authoritarian	Unequivocal	9.75	8.20	18.25
	Ambiguous	9.70	7.45	15.55
		10.28 (80)	7.96 (80)	18.41 (80)

Table 12

Analysis of Variance of Attitude Change  
Following the Persuasive Communication

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Source Credibility (A)	4816.63	2	2408.31	19.31	<.01
Message Ambiguity (B)	75.94	1	75.94	-----	-----
Authoritarianism (C)	130.54	1	130.54	1.04	-----
A x B	896.70	2	448.35	3.59	<.05
A x C	79.30	2	39.65	-----	-----
B x C	.10	1	.10	-----	-----
A x B x C	460.24	2	230.12	1.84	-----
Within	28424.85	228	124.67		
Total	34884.30	239			

As seen in Table 12, the main effect of source credibility was statistically significant, i. e. , the high source produced more attitude change than the other two sources (see Table 11). The mean attitude change for the high source was 18.41, for the anonymous source 7.96, and for the low source 10.28. By Tukey's test a difference between any two means is statistically significant if it is equal to or exceeds the value 4.10. It was found that the high source produced more attitude change than the other two sources, but there was no difference in attitude change between the anonymous and low source.

We next compared the mean attitude change among the three sources within each of the communication conditions. By Tukey's test, a difference between any two means is statistically significant if it is equal to or larger than 7.09.

When the communication was unequivocal, the mean attitude change produced by the high source was 21.70, for the low source the mean was 9.30, and for the anonymous source the mean was 7.35. The high source produced significantly more attitude change than the low and anonymous sources; there was no difference in attitude change between the low and anonymous sources.

Thus, we see that Hypothesis 2 was confirmed for the case where the communication was unequivocal, i. e. , the high credibility source produced more attitude change than the low credibility source.

When the communication was ambiguous, the mean attitude change produced by the high source was 15.12, for the low source the mean was

11.27, and for the anonymous source the mean was 8.57. None of the differences among the three pairs of means were statistically significant. It would seem, then, that when the communication is relatively ambiguous, the high credibility source was no more effective than the sources lower with respect to credibility. In the formulation of the problem, we suggested that this may turn out to be the case.

The above pattern of results is also reflected in the significant interaction between source credibility and message ambiguity as regards attitude change (see Tables 10 and 12). That is, the mean-difference in attitude change between the high source and the other two sources was relatively greater when the communication was unequivocal, as compared to the corresponding mean-differences when the communication was ambiguous.<sup>1</sup>

A second interpretation of the interaction between source credibility and message ambiguity is that for a high source the unequivocal communication seems to be more effective in producing attitude change than the ambiguous communication; the obverse seems to be the case for the anonymous and low source (see Table 10).

By Tukey's test, a difference between pairs of means presented below is statistically significant if it is equal to or larger than 11.50.

When the high source presented the unequivocal communication, the mean attitude change for high authoritarians was 25.15, and for low authori-

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<sup>1</sup>In general, this pattern of results was also obtained when we analyzed attitude change for each of the four opinion items separately. (See Appendix G).

tarians the mean was 18.25. This mean difference is not statistically significant. (If the less conservative t or F test is used instead of Tukey's "wholly significant difference", the critical mean-difference is 6.91, i. e., then the above difference between 25.15 and 18.25 reaches statistical significance. Since this comparison was planned a priori, it is perhaps not inappropriate to conclude that Hypothesis 6 received some support from the study).

When the high source presented the ambiguous communication, the mean attitude change for high and low authoritarians was 14.70 and 15.55, respectively. This mean-difference was not statistically significant (this was so even when the t-test was used).

When the low source presented the unequivocal communication, the mean attitude change for high authoritarians and low authoritarians was 8.85 and 9.75, respectively. This mean-difference was not statistically significant. When the low source presented the ambiguous communication, the mean attitude change for high and low authoritarians was 12.85 and 9.70, respectively. This mean-difference was also not significant. The same pattern of results was obtained when the less conservative t-test was used. There is no support, then, for Hypothesis 8 which stated that when the source is of low credibility, high authoritarians should change their attitudes in the direction advocated by the communication to a lesser extent than low authoritarians.

We also compared the degree of attitude change of high and low authoritarians, when the anonymous source presented the unequivocal or ambi-

guous communication. There was no difference in attitude change between high authoritarians and low authoritarians when the anonymous source presented the unequivocal or ambiguous communication (see Table 11).

3. Placement of the Communication: In the first section of this paper, it was argued that there are stimulus constraints on the extent to which one can misinterpret the intent of a persuasive communication. Furthermore, it was claimed that the degree of message ambiguity is one of those stimulus constraints. Consequently, we predicted that the more ambiguous the communication presented by a high source, the greater the degree of assimilation, i. e., the more the communication will be perceived as being closer to the S's initial attitude towards the issue (Hypothesis 3). Similarly, the more ambiguous the communication presented by a low source, the greater the degree of contrast, i. e., the more the communication will be perceived as being further away from the S's own position on the issue (Hypothesis 4).

As described in chapter II, the mean placement of the communication associated with the anonymous source is considered as the "true" position of the communication. Inasmuch as the mean before attitude on the part of the Ss was the same in the experimental conditions<sup>2</sup>, all that was needed to measure the degree of assimilation or contrast is the comparison between the mean placement of the communication associated with the high or low source with the mean placement of the communication associated

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<sup>2</sup>The grand mean before attitude on the part of the Ss was 17.65.

with the anonymous source - the "true" position of the communication.

In general, if the difference in mean placement between the anonymous and high source, in that order, is positive and statistically significant, we would have a case of assimilation (the same would be true when comparing the mean placement between the anonymous and low source). Conversely, if the difference in mean placement between the anonymous and low source, in that order, is negative and statistically significant, we would have a case of contrast (the same applies when comparing the anonymous and high source as regards placement of the communication).

The measure of communication placement was obtained by having the S answer the 4-item attitude scale as she thought the source of the communication had answered that scale himself. The higher the mean placement, the more the communication is perceived as being against brushing teeth often.

The mean placement of the communication as a function of source credibility and message ambiguity are presented in Table 13.

Table 13

Mean Placement of a Persuasive Communication  
as a Function of Source Credibility,  
and Message Ambiguity  
(N = 40 in each group)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	54.05	53.55	53.02
Ambiguous	45.95	41.85	44.70

The difference in mean placement between the anonymous and high source is -2.85 for the ambiguous communication. If anything this is a case of contrast and not assimilation. The corresponding mean-difference for the unequivocal communication is +0.53 (see Table 13). By Scheffe's test for multiple comparisons the difference between the values -2.85 and +0.53 is not statistically significant ( $t < 1$ ; the critical t-value at the .05 level of significance is 5.15. This critical t-value also applies for the comparisons presented below).

Thus, it must be said that Hypothesis 3 received no support from the study, i. e., there was no difference in degree of assimilation of the communication presented by the high source as a function of message ambiguity.

The difference in mean placement between the anonymous and low source is -4.10 for the ambiguous communication, and -0.50 for the unequivocal communication. Although it is in the predicted direction, the difference between the above two values is not statistically significant. It seems, then, that Hypothesis 4 also received no support from the study, i. e., there was no difference in degree of contrast of the communication presented by the low source as a function of message ambiguity.

Implicit in the formulation of the problem was the notion that there would not be any differential effects on the placement of the unequivocal communication as a function of source credibility. On the other hand, when the communication is ambiguous, the communication was expected to be assimilated when the source was of high credibility, and contrasted

when the source was of low credibility.

As can be seen in Table 13, the difference in mean placement between the anonymous and the high source is +0.53 for the unequivocal communication. This mean-difference is not statistically significant. Thus, when the communication is unequivocal, the position of the high source is not assimilated by the receiver.

The difference in mean placement between the anonymous and low source was -0.50 for the unequivocal communication. Again, this mean-difference was not statistically significant. This indicates that when the communication was unequivocal, the position of the low source was not contrasted by the receiver.

The difference in mean placement between the anonymous and high source is -2.85 for the ambiguous communication. If anything this is a case of contrast and not assimilation. This mean-difference was not, however, statistically significant. It must be said, then, that contrary to expectation, the ambiguous communication presented by the high source was not assimilated by the receiver.

The difference in mean placement between the anonymous and low source was -4.10 for the ambiguous communication. This difference was also not statistically significant. Thus, it must be said that the ambiguous communication presented by the low source was not contrasted by the receivers.

We expected that the mean placement of the unequivocal communication would not vary as a function of authoritarianism in the receiver.

However, when the ambiguous communication is presented by the high source, it was predicted that high authoritarians would assimilate the communication to a greater extent than low authoritarians (Hypothesis 9). Conversely, when the source of the ambiguous communication is of low credibility, we expected that high authoritarians would contrast the communication to a greater extent than low authoritarians (Hypothesis 10).

The mean placement of the communication as a function of source credibility, message ambiguity, and authoritarianism are presented in Table 14, and the analysis of variance is shown in Table 15.

Table 14

Mean Placement of a Persuasive Communication  
as a Function of Source Credibility, Message  
Ambiguity, and Authoritarianism  
(N = 20 in each cell)

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	52.45	51.00	49.55
	Ambiguous	45.65	40.50	42.40
Low Authoritarian	Unequivocal	55.65	56.10	56.50
	Ambiguous	46.25	43.20	47.00
		50.00 (80)	47.70 (80)	48.86 (80)

Table 15

Analysis of Variance of Placement  
of the Communication

Source	SS	df	MS	F	p
Source Credibility (A)	211.61	2	105.80	1.21	-----
Message Ambiguity (B)	5273.44	1	5273.44	60.66	< .01
Authoritarianism (C)	893.20	1	893.20	10.27	< .01
A x B	162.67	2	81.33	-----	-----
A x C	150.21	2	75.10	-----	-----
B x C	90.04	1	90.04	1.03	-----
A x B x C	.18	2	.09		
Within	19820.55	228	86.93		
Total	26601.90	239			

As shown in Table 15, the main effect of message ambiguity is statistically significant, i. e., the ambiguous communication was placed closer to the S's initial position on the target issue than was the case with the unequivocal communication (see Table 13).

By analysis of variance, the main effect of authoritarianism is statistically significant, i. e., in general, authoritarian receivers placed the communication closer to their initial attitude than was the case with egalitarian receivers (see Table 14).

As can be seen from Table 14, the difference in mean placement of the unequivocal communication between the anonymous and high source is +1.45 for high authoritarians, and the corresponding mean difference for

low authoritarians is  $-0.40$ . By Scheffe's test the difference between  $+1.45$  and  $-0.40$  is not statistically significant. Thus, when the unequivocal communication is presented by the high source there was no difference in placement of the communication as a function of authoritarianism.

The difference in mean placement of the unequivocal communication between the anonymous and low source is  $-1.45$  for high authoritarians, and the corresponding mean difference for low authoritarians is  $+0.45$ . The difference between  $-1.45$  and  $+0.45$  is not statistically significant. It can be said, then, that when the unequivocal communication is presented by the low source, there was no difference in placement of the communication as a function of authoritarianism.

The difference in mean placement of the ambiguous communication between the anonymous and high source is  $-1.90$  for high authoritarians, and the corresponding mean-difference for low authoritarians is  $-3.80$ . If anything, these values reflect contrast and not assimilation. However, the difference between  $-1.90$  and  $-3.80$  is not statistically significant. It must be said, that Hypothesis 9 received no support from the study, i. e., even when the high source presented the ambiguous communication, there is no difference in placement of the communication as a function of authoritarianism.

The difference in mean placement of the ambiguous communication between the anonymous and low source is  $-5.15$  for high authoritarians, and  $-3.05$  for low authoritarians. The difference between  $-5.15$  and  $-3.05$ , although in the predicted direction, is not statistically signifi-

cant. Thus, Hypothesis 10 also received no support from the results, i. e., even when the low source presented the ambiguous communication, there is no difference in placement of the communication as a function of authoritarianism.

Thus, it must be said that this study provided no support for our hypotheses as regards the effects of message ambiguity, source credibility, and authoritarianism with respect to the placement of the persuasive communication.

4. Learning of Communication Content: In order to determine whether the learning of the communication content was in any way a mediating factor of the obtained relationship between source credibility and attitude change, and between authoritarianism and attitude change, the S was asked to recall as many arguments or points that were made in the communication (see Appendix C). A score of 1 was assigned to every correct point that was recalled by the S. Thus, the higher the score the greater the degree of learning of the communication.

Table 16 presents the mean recall of points made in the communication as a function of source credibility, message ambiguity, and authoritarianism.

Table 16

Mean Recall of Points Made in the Communication  
(N = 20 in each cell)

<u>Receiver</u>	<u>Communication</u>	<u>Source Credibility</u>		
		Low	Anonymous	High
High Authoritarian	Unequivocal	4.25	4.00	5.30
	Ambiguous	4.85	4.60	4.55
Low Authoritarian	Unequivocal	4.75	5.00	4.85
	Ambiguous	4.70	4.95	4.50
		4.63 (80)	4.63 (80)	4.80 (80)

By analysis of variance, none of the main effects nor the interaction effects were statistically significant.

There was no differential effects on the mean number of arguments recalled as a function of source credibility, when the communication was ambiguous or when it was unequivocal. With one exception, the same was true when we considered the degree of authoritarianism in the receiver. The one exception was when the anonymous source presented the unequivocal communication. In this experimental condition high authoritarian receivers recalled a mean of 4.00 points, and low authoritarian receivers recalled a mean of 5.00 points; this mean-difference is statistically significant (the critical mean-difference is .94).

Thus, it can be said that, in general, the learning factor played no

role as regards the obtained effects of source credibility and authoritarianism on the degree of attitude change. We would also like to point out that although high authoritarian receivers learned the communication to a lesser extent than low authoritarian receivers when the anonymous source presented the unequivocal communication, there was no difference in attitude change between high authoritarians and low authoritarians in the same experimental condition.

Internal Analysis of Message Ambiguity: Hypothesis 2 predicted that immediately following a persuasive communication, a high credibility source should produce more attitude change than a low credibility source. However, we qualified this prediction by saying that Hypothesis 2 should definitely obtain when the communication is unequivocal, but that when the communication is ambiguous, a high source may not necessarily produce more attitude change than a low source. We did indeed find that Hypothesis 2 was obtained when the communication was unequivocal, but not when it was ambiguous. When the communication was ambiguous, there was no difference in attitude change between the high and low credibility sources.

Hypothesis 6 predicted that when a persuasive communication is presented by a high credibility source, high authoritarian receivers will change their attitudes in the advocated direction to a greater extent than low authoritarian receivers. Again, this prediction was qualified by our arguments that Hypothesis 6 should obtain when the communication is unequivocal, but not necessarily when the communication is ambiguous.

We did find that this prediction was confirmed when the communication was unequivocal, i. e. , by use of the less conservative t-test. But when the communication was ambiguous, there was no difference in attitude change between high authoritarians and low authoritarians when the high source was associated with the communication.

Thus, it can be said that we have established a limiting condition for the relationships specified in Hypotheses 2 and 6. The reader should keep in mind, however, that the results with respect to Hypothesis 6 are not as straightforward as those for Hypothesis 2, i. e. , the expectations with regard to Hypothesis 6 were obtained only when the less conservative statistical test was used.

We are here making the claim that it was the variable of message ambiguity that was responsible for the obtained pattern of results. However, the question can be raised that it was not the variable of message ambiguity, but rather the variable of conclusion drawn by the communication versus conclusion not drawn by the communication, that was responsible for the pattern of results described above.

A number of studies (Hovland and Mandell, 1952; Thistlethwaite, de Haan and Kamenetsky, 1955; Fine, 1957) have investigated the relative effectiveness as regards attitude change between a communication that explicitly states its recommendation (conclusion drawn), and a communication that is essentially the same but which lets the audience infer the intended recommendation (conclusion not drawn). We essentially followed the same procedure in our manipulation of message ambiguity, i. e. ,

the only difference between the unequivocal and ambiguous communication was that the recommendation was explicitly made in the former communication, but not in the latter communication. Thus, it was deemed necessary to conduct an internal analysis in order to demonstrate that it was the variable of message ambiguity rather than that of conclusion-drawing that was responsible for the pattern of results described at the beginning of this section.

The first step in the internal analysis was to select a criterion for classifying a communication as ambiguous or unequivocal which is not dependent on whether or not a conclusion was drawn.

As a check of the manipulation of message ambiguity, the experimental Ss were asked to indicate on an 11-point rating scale how clear the source was in stating his position on the target issue. The mid-point of this scale is reflected by the score of 6, and the higher the score the greater the perceived clarity of the communication. Thus, it was decided to classify an S as being exposed to the unequivocal communication if she obtained a score of 7 or above with respect to perceived clarity, whether or not the communication drew the conclusion. Conversely, an S was classified as being exposed to the ambiguous communication if she obtained a score of 6 or below as regards perceived clarity, again, whether or not the communication made the conclusion explicit. Thus, in the remainder of this section, what was hitherto called unequivocal and ambiguous communications, will be labeled conclusion-drawn by the source and conclusion not drawn by the source, respectively.

The new breakdown of the experimental Ss is presented in Table 17.

Table 17

Distribution of Subjects into Two Communication  
Conditions Determined by Clarity Score

<u>Communication</u>	<u>Conclusion Drawn</u>	<u>Conclusion Not Drawn</u>	<u>Total</u>
Unequivocal	105	55	160
Ambiguous	15	65	80
	120	120	240

The mean attitude change as a function of source credibility for the new classification of the unequivocal and ambiguous communications are presented in Table 18.

Table 18

Internal Analysis of Attitude Change as a  
Function of Source Credibility

Communication	Conclusion Drawn			Conclusion Not Drawn			Total		
	<u>Source</u>			<u>Source</u>			<u>Source</u>		
	Low	Anonymous	High	Low	Anonymous	High	Low	Anonymous	High
Unequivocal	9.50 (34)	6.23 (34)	22.21 (37)	11.73 (26)	5.92 (13)	19.68 (16)	10.46 (60)	6.14 (47)	21.45 (53)
Ambiguous	8.16 (6)	13.66 (6)	15.33 (3)	10.42 (14)	9.85 (27)	13.04 (24)	9.75 (20)	10.54 (33)	13.29 (27)

Note: The numbers in parentheses represent the n in each cell.

The first step in the Internal Analysis was to compare the mean attitude change among the three sources, based on the row totals when the communication was unequivocal. In addition, we compared the degree of attitude change among the sources, based on the row totals when the communication was ambiguous.

A difference between any two means, presented below, is statistically significant if it is equal to or greater than the value 7.17.

As shown in Table 18, the mean attitude change when the high source presented the unequivocal communication was 21.45, for the low source the mean was 10.46, and for the anonymous source the mean was 6.14. As can be seen, the high source produced more attitude change than the low and anonymous sources, whereas there was no difference in attitude change between the low and anonymous sources. This pattern of results is the same as that found in the original analysis where the unequivocal communication was synonymous with the communication that drew the conclusion.

The mean attitude change when the high source presented the ambiguous communication was 13.29, for the low source the mean was 9.75, and for the anonymous source the mean was 10.54. None of these differences were statistically significant. Again, these results were also in the original analysis where the ambiguous communication was synonymous with conclusion not drawn by the communication.

The next and more crucial step in the internal analysis, was to compare the two subtotal cells within a given row, i. e., to compare the ef-

fects of source credibility on attitude change between the cell Unequivocal-Conclusion Drawn and the cell Unequivocal-Conclusion Not Drawn; and, similarly, to compare the source effects on attitude change between the cell Ambiguous-Conclusion Drawn and the cell Ambiguous-Conclusion Not Drawn (see Table 18). If it was the variable of message ambiguity that was responsible for the results in the original analysis, and not the variable of conclusion-drawing, then we should obtain no difference in the pattern of results between the two cells within a given row, i. e., when the degree of message ambiguity is held constant but where the variable of conclusion-drawing varies.

The critical mean-difference for the comparisons presented below is 15.15.

For the cell Ambiguous-Conclusion Drawn, the mean attitude change for the high, low, and anonymous sources were 15.33, 8.16, and 13.66, respectively. None of these differences were statistically significant. For the cell Ambiguous-Conclusion Not Drawn, the corresponding means were 13.04, 10.42, and 9.85. Again, none of these mean-differences were statistically significant.

Thus, for the preceding results, it can be said that it was the variable of message ambiguity, and not that of conclusion-drawing, that was responsible for the pattern of results obtained in the original analysis.

The pattern of results for the two cells in the row Unequivocal are more complicated and confusing.

In the cell Unequivocal-Conclusion Drawn, the mean attitude change for

the high source was 22.21, for the low source the mean was 9.50, and for the anonymous source the mean was 6.23. The only significant differences was that the high source produced more attitude change than the anonymous source. It is rather surprising that, unlike the original analysis, in the internal analysis the high source was no more effective than the low source with respect to attitude change. In this cell not only did the communication make its position explicit-conclusion drawn - but the communication was also perceived as being clear in stating its position. As a result, one would expect that in the internal analysis the high source would produce more attitude change than the low source, which was the case in the original analysis.

The above pattern of results for the cell Unequivocal-Conclusion Drawn, is also difficult to explain on logical grounds. As described earlier, the high source was perceived as being more credible than the other two sources, but the anonymous source was perceived as being more credible than the low source. One would expect that if the highest credibility source produces more attitude change than a relatively moderate credibility source (the anonymous source), the former should also produce more attitude change than the lowest credibility source. And yet, what we find is that although the high source produces more attitude change than the anonymous source, there is no difference in attitude change between the high and low sources.

In the cell Unequivocal-Conclusion Not Drawn, the mean attitude change for the high source was 19.68, for the low source the mean was 11.73, and

for the anonymous source the mean was 5.92. None of these differences were statistically significant. This pattern of results was the same as that obtained in the original analysis where conclusion not drawn was synonymous with the ambiguous communication. It must be said, then, that, the variable of conclusion drawing was, in part, responsible for the results in the original analysis. On balance, however, it may be said that it was primarily the variable of message ambiguity that was responsible for the obtained set of results in the original analysis.

An internal analysis was also done with respect to Hypothesis 6, which dealt with the degree of attitude change on the part of high and low authoritarians when a high source presented the persuasive communication. Table 19 shows the mean attitude change as a function of authoritarianism when the high source presented the unequivocal or ambiguous communication, as these terms are defined in the internal analysis.

Table 19

Internal Analysis of Attitude Change as a Function  
of Authoritarianism When the High Credibility  
Source Presented the Communication

Communication	Conclusion Drawn		Conclusion Not Drawn		Total	
	Authoritarianism		Authoritarianism		Authoritarianism	
	High	Low	High	Low	High	Low
Unequivocal	25.36 (19)	17.83 (18)	19.00 (6)	20.10 (10)	24.60 (25)	18.64 (28)
Ambiguous	2 (1)	22 (2)	12.85 (14)	13.10 (10)	12.13 (15)	14.75 (12)

We followed the same procedure as we did in the internal analysis for Table 18, i. e., we first compared the mean attitude change between high authoritarians and low authoritarians for the row total when the communication was unequivocal, and when it was ambiguous. We then compared the pattern of results between the two subtotal cells within a given row.

Actually two analyses were made, one following Tukey's procedure and the other the less conservative t-test. In the original analysis, the results varied as a function of which statistical test was used to analyze the data.

To be statistically significant, the mean-differences presented below must equal or exceed the value of 9.14, by Tukey's test.

For the total row Unequivocal, the mean attitude change for high authoritarians was 24.60, and for low authoritarians the mean was 18.64. This difference is not statistically significant. For the total row Ambiguous, the corresponding means were 12.13 and 14.75, and, again there was no difference between the means. These results are the same as those found in the original analysis when Tukey's test was used.

By t-tests, we find that for the row Unequivocal authoritarians changed their attitudes to a greater extent than low authoritarians ( $t = 2.04$ ,  $p < .05$ ), but for the row Ambiguous there was no difference in attitude change as a function of authoritarianism. Again, these results are the same as those in the original analysis when the less conservative t-test was used.

For the cell Ambiguous-Conclusion Not Drawn, there was no difference in attitude change as a function of authoritarianism, by Tukey's test and

by the t-test; this was also the case in the original analysis. Because of the small number of cases, it did not make any sense to compare the means in the cell Ambiguous-Conclusion Drawn.

For the mean comparisons presented below, the critical mean-difference is 13.17, by Tukey's test.

In the cell Unequivocal-Conclusion Drawn, the mean attitude change for high and low authoritarians was 26.36 and 17.83, respectively. By Tukey's test this mean-difference is not statistically significant. The same was true in the cell Unequivocal-Conclusion Not Drawn. This was also the case in the original analysis.

By t-tests, in the cell Unequivocal-Conclusion Drawn, high authoritarians changed their attitudes to a greater extent than low authoritarians ( $t = 2.45, p < .05$ ). However, in the cell Unequivocal-Conclusion Not Drawn, there was no difference in attitude change as a function of authoritarianism. With the exception of this last result, it may be said that it was primarily the variable of message ambiguity that was responsible for the pattern of results obtained in the original analysis, even when t-tests were used.

Internal analysis was also made with respect to the effects of the low and anonymous sources on high and low authoritarian receivers as regards attitude change. The pattern of results were exactly the same as that obtained in the original analysis, viz., when the low or anonymous source presented the communication, there was no difference in attitude change between high and low authoritarian receivers.

Summary of Original Analysis: It was found that when a high credibility source presented the persuasive communication, the communication was perceived as being more valid than when the source was of low credibility, i. e., Hypothesis 1 was confirmed by the results.

When the high source presented the unequivocal communication, the communication led to more attitude change than was the case when the source was of low credibility, i. e., Hypothesis 2 was supported by the study. However, when the communication was ambiguous, there was no difference in attitude change between the high credibility and low credibility source. This last result was anticipated in the formulation of the problem. However, the rationale we advanced to explain this last result, received no support from the study. We had expected that the ambiguous communication associated with a high credibility source would be assimilated by the receivers of that communication, but the communication was not assimilated by the receivers.

In general, none of our expectations with respect to the placement of the communication as a function of message ambiguity were supported by the results. We found that, given a high source, the ambiguous communication was not assimilated to a greater extent than the unequivocal communication. Similarly, given a low source, the ambiguous communication was not contrasted to a greater extent than the unequivocal communication. That is, Hypotheses 3 and 4 received no support from the study.

When the high credibility source presented the persuasive communication, there was no difference in perceived validity between the high and

low authoritarian receivers, i. e., Hypothesis 5 was not confirmed by the study. Similarly, Hypothesis 7, was not supported by the results, i. e., there was no difference in perceived validity between high and low authoritarian receivers, when the low credibility source presented the persuasive communication. However, it may be said that the rationale underlying Hypotheses 5 and 7 received some support from the study, i. e., the difference in perceived validity between the high credibility source and the low credibility source, was relatively greater for high authoritarian receivers as compared to low authoritarian receivers. In other words, high authoritarian receivers were more affected by variations in the credibility of the source with respect to the evaluation of the persuasive communication.

It may be said that when the high credibility source presented the unequivocal communication, high authoritarian receivers changed their attitudes in the direction advocated by the communication to a greater extent than the low authoritarian receivers, i. e., when the less conservative statistical test was used. Thus, there is some support for Hypothesis 6. However, when the high credibility source presented the ambiguous communication, there was no difference in attitude change between high and low authoritarian receivers, even when the less conservative statistical tests were used. This last result was anticipated in the formulation of the problem. However, our rationale as to why this result was obtained, received no support from the study. That is, when the high credibility source presented the ambiguous communication, high authoritarian re-

ceivers did not assimilate the communication to a greater extent than low authoritarian receivers. In other words, Hypothesis 9 was not confirmed by the study. Similarly, Hypothesis 10 also received no support from the study, i. e., when the low credibility source presented the ambiguous communication, high authoritarian receivers did not contrast the communication to a greater extent than low authoritarian receivers. Hypothesis 8 also was not confirmed, i. e., when the low credibility source presented the persuasive communication, there was no difference in attitude change between high and low authoritarian receivers.

On the basis of the recall scores of the Ss, it may be said that the factors of attention and comprehension played no role in determining the obtained differences in degree of attitude change.

Finally, on the basis of the internal analyses, it can be said that it was the variable of message ambiguity that was primarily responsible for the obtained pattern of results.

## IV

## DISCUSSION

The Effects of Source Credibility

When a receiver is confronted with a persuasive communication he can react to that persuasive attempt in a variety of ways. He could change his attitude in the direction advocated by the communication; he could attempt to change the source's attitude towards his own position on the issue; he could seek social support for his position; he could derogate the source; and, he could misinterpret the intent of the persuasive communication, by either assimilating the communication's position, or contrasting that position, depending on other variables in the communication situation (cf. Aronson, Turner, and Carlsmith, 1963).

In the present investigation, we concerned ourselves with two possible reactions to the communication situation, viz., the change in the receiver's attitude in the advocated direction, and the receiver's misinterpretation of the persuasive communication.

In the formulation of our problem, we made the assumption that differences in attitude change as a function of the source variable of credibility would be accompanied by corresponding differences in the degree of validity attributed to the persuasive communication. In addition, we argued that the covariation between the degree of perceived validity and the amount of attitude change may obtain only when the communication is unequivocal. However, when the communication is relatively ambiguous, the relationship between perceived validity and attitude change could

possibly break down. The rationale underlying these expectations was that in the case of an ambiguous communication, the receiver, in addition to changing his attitude, could also react to the persuasive attempt in terms of "misinterpretation" of the ambiguous communication. Specifically, it was argued that when a high credibility source presents an ambiguous communication, the receiver could assimilate the communication's position towards his own stand on the issue, thus minimizing the pressure to change his attitude in the advocated direction. However, the receiver of the ambiguous communication would still attribute a high degree of validity to that communication. Thus, it is possible to have a situation where the persuasive communication is perceived as being true and valid, and yet the communication is not very effective with respect to attitude change.

We did indeed find a positive relationship between perceived validity and attitude change as a function of source credibility when the communication was unequivocal, but not when the communication was relatively ambiguous. Specifically, when the unequivocal communication was presented by the high source, it led to greater perceived validity of the communication and to more attitude change in the receiver than was the case when the same communication was presented by the low source. On the other hand, when the high source presented the relatively ambiguous communication, the communication was perceived as being more valid than when the low source presented the communication, but there were no differences in degree of attitude change between the high credibility and low credibility

source. However, this last result cannot be explained in terms of the second possible reaction to the communication situation, viz., "misinterpretation" of the communication. That is, we did not find that the ambiguous communication associated with the high credibility source was assimilated by the receiver of that persuasive communication. Below we elaborate a possible alternative explanation for the above pattern of results.

Hovland and his associates (Hovland, Janis and Kelley, 1953), advance two explanations for the effects of source credibility on the degree of acceptance of a persuasive communication. One explanation refers to what we are calling perceived validity. The second explanation refers to the incentive effects of the source, e. g., the desire for social approval and avoidance of social disapproval. It is certainly possible, however, that all three factors play an important role in the communication situation, i. e., perceived validity, social approval, and avoidance of punishment.

One may ask whether we can speak of an incentive to accept a persuasive communication which is derived from the desire for social approval and avoidance of punishment, when dealing with noninvolving issues. After all, a difference of opinion on noninvolving issues is not likely to generate much social disapproval. It can be argued, however, that as a result of socialization, where disagreement with authority figures can lead to deleterious consequences, people develop a tendency to accept recommendations made by high valenced sources. It is possible that this tendency becomes generalized to noninvolving issues as well as to

ego-involving issues. Thus, it can perhaps be said that a receiver of a communication associated with a high source, will change his attitude in the advocated direction to the extent to which he perceives the communication as being valid, and the extent to which the socially based incentives to accept recommendations made by high valenced sources are aroused in the communication situation.

When a high credibility source presents an unequivocal communication, the receiver not only perceives the communication as being true and valid, but he is also more motivated to "accept" the recommendation made by the high source. Consequently, we found that the high source produced more attitude change than the low source.

It is possible, however, that the tendency to accept recommendations made by high valenced sources does not develop when the communication is relatively ambiguous. That is, when important others are not explicit about their intentions with regard to a person's behavior, the person is not as concerned about social disapproval should he fail to conform sufficiently to the recommendations made by authority figures. This may be so because the person feels he can defend against potential social criticism by arguing that the authority was not clear about his intentions. It can be said, then, that when a receiver is confronted with an ambiguous communication presented by a high credibility source, the incentive to "accept" the recommendation made by the high source is not a very important factor in the situation. Consequently, there were no differences in attitude change as a function of source credibility when the communi-

cation was relatively ambiguous.

In light of the preceding discussion we arrive at the tentative proposition that the perceived validity of a persuasive communication is perhaps a necessary but not sufficient condition for producing attitude change. That the degree of perceived validity is not a sufficient condition for producing attitude change is evidenced by the studies of Hovland and Mandell (1952), and Weiss (1961), where there was no relationship between degree of perceived validity and amount of attitude change.

Expertness and Trustworthiness: The source variable of credibility has two components, expertness and trustworthiness. In the literature we find somewhat of a controversy as to which component is relatively more important in determining the effects of source credibility on attitude change.

On the basis of the study by Hovland and Mandell (1952), and in light of the literature on the effects of the source's intent to persuade, McGuire (1969) concludes that the variable of trustworthiness plays a relatively minor role in the communication situation.

The sources in the Hovland and Mandell study varied with respect to trustworthiness, but were approximately the same with respect to expertness. These investigations found no difference in attitude change between the high trustworthy and low trustworthy source; there was a difference in degree of perceived validity.

Several researchers varied trustworthiness or "objectivity" of the source by forewarning some Ss of the source's persuasive intent, while

other Ss were not forewarned of the source's intentions. Generally, it is found that awareness of the source's intention to persuade does not decrease the amount of attitude change, as compared to the condition where this awareness is absent (Allyn and Festinger, 1961; McGuire and Papageorgies, 1962; McGuire and Millman, 1965). The variable of awareness of persuasive intent does, however, decrease the amount of attitude change, provided the warning of persuasive intent precedes the communication by a certain period of time (Freedman and Sears, 1965). Sometimes, forewarning actually increased the degree of attitude change (Sears, 1965). Generally, however, McGuire (1969) argues that the effects of forewarning on attitude change are minimal.

However, the following considerations should be kept in mind when considering the effects of awareness of persuasive intent. As Weiss (1957) points out, most communicators have some kind of axe to grind, so that awareness of persuasive intent per se should not automatically reduce the effectiveness of a persuasive communication. One would expect that it is only when awareness of persuasive intent leads the receiver to suspect that the source would hide vital information from his presentation that the receiver would refuse to accept the communication's recommendations. That is, the receiver may argue that had the source presented the missing information, the latter's arguments would not appear as valid as they seem to be now, and, consequently, the receiver refuses to accept the communication. However, when the receiver does not suspect that the source would hide vital information from his presentation, then, even

though the receiver is aware of the source's intent to persuade, he will nonetheless be influenced by the communication.

Papageorgis (1968) offers a similar explanation for the inconsistent findings with respect to the effects of warning of persuasive intent on the degree of attitude change. Specifically, Papageorgis (1968) suggests that the effects of warning will vary as a function of the type of warning. If the warning is neutral, i. e., if the receiver is merely given factual type of information, then warning may have no effect on attitude change. It is only when the warning is of the negative type where the receiver is made aware of the manipulative intent on the part of the source, and when the receiver is presumably suspicious of the adequacy of the presentation, will warning decrease the amount of attitude change.

In any case, McGuire (1969) argues that it is the variable of source expertness which is primarily responsible for the effects of source credibility on the degree of attitude change. Other investigators would take issue with McGuire's position. Kelman and Hovland (1953), for example, presented a communication to their Ss which advocated a more lenient treatment of juvenile delinquents. In one condition the source was a judge in a juvenile court who had written several authoritative books on delinquency, and in another condition the source was a dope peddler out on bail. Kelman and Hovland (1953) found that when the communication was presented by the high source, it was perceived as being more valid and it led to more attitude change, than was the case when the source was of low credibility. On the basis of their analyses, however, these authors con-

clude that it was primarily the variable of trustworthiness that was responsible for the obtained differences in attitude change. This conclusion receives additional support from a study by Choo (1964). Choo presented a communication to her Ss advocating no causal relationship between smoking and cancer. The communication was said to come from either a specialist of the National Cancer Institute, or a director of the Tobacco Industry Public Relations Committee. On the basis of the S's ratings, Choo found that both sources were perceived as approximately equal in expertness, but that one source was perceived as being more trustworthy than the other. Choo found that the high source produced more attitude change than the low source, i. e. , the difference in attitude change was determined by the difference in trustworthiness between the two sources; although Choo (1964) measured the S's perceived validity of the communication, she did not report the results on perceived validity.

This issue of expertness versus trustworthiness will best be resolved when different levels of expertness and different levels of trustworthiness will be manipulated in the same experiment.

Attitude Change: A general issue in the area of communication and attitude change, is whether the receiver of a persuasive communication actually changes his attitude in the direction advocated by the communication, or, instead, the receiver changes the object of the attitude. This issue was raised in connection with the early studies on "prestige suggestion".

The study by Lorge (1936) illustrates the typical paradigm used in the

area of prestige suggestion. Lorge asked Ss to rate a number of authors. A few days after, the S indicated the extent of his agreement with a number of statements, and he was also asked to choose which of two names presented to him was the author of the statement. For example, Ss were asked to indicate the extent of their agreement with the statement, "I hold it that a little rebellion, now and then, is a good thing, and as necessary in the political world as storms are in the physical". Following this judgment they had to indicate whether Lenin or Jefferson was the author of this statement. Two to four weeks following the last task, the Ss were asked again to indicate the extent of their agreement with the set of statements, but this time the statements were respectively attributed to their true authors only.

Lorge (1936) found that the Ss increased their agreement with a statement if at first they believed a low prestige source was the author and they were subsequently told that a high prestige source was the true author. In other words, the Ss' ratings of the statements varied with the prestige of the source associated with the statement. There was also a tendency, albeit weak, to decrease agreement with a statement if the Ss at first believed that a high prestige source was the author, and were subsequently told that the true author was a low prestige source.

Asch (1948, 1952) has criticized the conclusion Lorge (1936) and others derived from the studies of prestige suggestion. Asch has attributed to Lorge the interpretation that the judgment of a given statement does not change as a function of source prestige, e. g., the statement on rebellion

quoted earlier has the same meaning to the S regardless of whether the presumed author is Lenin or Jefferson. The reason why there is a high degree of agreement with the statement when attributed to Jefferson, and a low degree of agreement when the presumed source is Lenin, is that in the first case the constant stimulus is associated with a positive author, and in the latter case with a negative author. There is some doubt as to whether the above reflects Lorge's position, but that seems to be Asch's interpretation.

Asch (1952) describes a study which suggests that the interpretation of the statement does not remain constant, but rather varies with the degree of source prestige. Asch had some Ss read statements attributed to high prestige sources, while others read the same statements which were, however, attributed to low prestige sources. The S's task was to interpret the meaning of the statements. Asch found that the meaning of a statement does vary with the degree of source prestige. When, for example, the statement on rebellion is attributed to Jefferson it means peaceful change of political control, or at most a mild form of political agitation. When Lenin is the presumed author, the statement then means armed revolution. Asch (1948, 1952) thus concludes that the attitudes towards a given statement does not really change as a function of source prestige, but rather it is the meaning of the statement that changes. For example, the S does not really increase his agreement with the rebellion statement as its author is changed from Lenin to Jefferson. His agreement with Jefferson as author involves an entirely different statement.

The results of the present study seem to indicate that for this type of issue and communication, it is the attitude that changes and not the object of the attitude. When the communication was unequivocal, there was no difference in placement of the communication between the high credibility and low credibility sources, i. e. , receivers exposed to the high source perceived the communication as advocating the same position as did the receivers exposed to the low source. In addition, there was no difference between the two sources as regards learning of the communication content. Thus, it would be reasonable to assume that receivers exposed to the high source and those exposed to the low source interpreted the communication content and the advocated position in the same manner, i. e. , the attitude object was the same in both conditions. And yet, when the communication was unequivocal, the high credibility source produced more attitude change than the low credibility source.

Discrepant Behavior: What are the effects of source credibility on attitude change, if the receiver, in addition to merely listening to the persuasive communication, also engages in behavior which is discrepant with his initial stand on the issue? According to Dissonance Theory (Festinger, 1957), an individual who engages in behavior which is discrepant with his beliefs, will experience dissonance. One way of reducing dissonance is to change one's beliefs in a direction more compatible with the discrepant behavior. The amount of experienced dissonance will vary as a function of the intensity of the external pressures that led the individual to engage in the discrepant behavior and, consequently, the

amount of attitude change will vary accordingly. In other words, the greater the justification for engaging in discrepant behavior, the smaller the degree of cognitive dissonance, and the smaller the amount of attitude change. When the source of a persuasive communication is of low credibility, the pressure to engage in the recommended behavior is smaller than is the case when the source is of high credibility, i. e. , the receiver feels less justified in engaging in discrepant behavior when the source is of low credibility. Consequently, the receiver who decides to act in accordance with the recommendation, will experience more dissonance when the source is of low credibility. Thus, we should expect more attitude change when the source is of low credibility as compared to a high credibility source. The literature provides some support for this expectation (Smith, 1961; Zimbardo, Weisenberg, Firestone, and Levy, 1965; Powell, 1965). Powell (1965), for example, presented a persuasive communication to college students which advocated donations of blood to the Red Cross. The high source was a Public Relations Executive of the Red Cross, and the low source was a volunteer worker of the Red Cross. In one of Powell's conditions the Ss were given the choice to volunteer for a blood donation. He found that among the Ss who actually made an appointment to donate blood, those exposed to the low source changed their attitudes to a greater extent than those exposed to the high source with respect to the position advocated in the communication. In another experimental condition, however, where the Ss were not asked to engage in discrepant behavior, Powell found the usual obtained relationship,

viz., the high credibility source produced more attitude change than the low credibility source.

#### The Interaction Effects of Source Credibility and Authoritarianism

The obtained results with respect to the interaction between source credibility and authoritarianism as regards perceived validity and attitude change, are not as straightforward as the results concerning the main effects of source credibility.

For one thing, there was no direct support for Hypotheses 5 and 7. That is, given a high credibility source, there was no difference in perceived validity between high and low authoritarian receivers; and, similarly, when the source was of low credibility, there was also no difference in perceived validity between high and low authoritarian receivers. However, there is some support for the rationale underlying Hypotheses 5 and 7, viz., the difference in perceived validity between the high credibility source and the other two sources, was relatively greater for high authoritarian receivers, as compared to low authoritarian receivers. In other words, high authoritarian receivers were more affected by variations in source credibility in their evaluation of the persuasive communication.

As regards the effects of a high credibility source on high and low authoritarian receivers with respect to attitude change, again, the results are not straightforward. If we use the more conservative Tukey test for comparing individual means, we find that there is no difference in attitude change between high and low authoritarian receivers when the

high credibility source presents the ambiguous or unequivocal communication. However, when the less conservative t-test is used, we find that when the high credibility source presents the unequivocal communication, high authoritarian receivers changed their attitudes to a greater extent than low authoritarian receivers. But when the communication is ambiguous there is no difference in attitude change as a function of authoritarianism.

Inasmuch as the above comparisons were planned prior to the execution of the study, perhaps it can be said that our expectations were supported by the results. Thus, given a high credibility source, we find differences in attitude change as a function of authoritarianism, when the communication is unequivocal, but not when it is relatively ambiguous.

In the formulation of the problem, we anticipated the possibility that when the high source presents an ambiguous communication, there may not be any difference in attitude change between high authoritarian and low authoritarian receivers. However, the rationale we advanced for explaining this result received no support from the study. We had expected that when the communication is ambiguous, high authoritarians would assimilate the position of the high source to a greater extent than low authoritarians and, consequently, the former would experience less pressure to change their attitude. But there was no difference in placement of the ambiguous communication associated with the high source between high authoritarian and low authoritarian receivers.

We propose the following explanation for the above set of results.

As argued earlier, the degree of attitude change will, in part, vary as a function of the incentive to accept recommendations made by high valenced sources. According to Adorno et al. (1950) the authoritarian person is highly concerned with social approval and social disapproval. Consequently, the tendency to accept communications from high valenced sources should be relatively greater for high authoritarian receivers. Thus, we found that when the high source presented the unequivocal communication, high authoritarian receivers changed their attitudes to a greater extent than low authoritarian receivers.

We also argued earlier that in ambiguous situations, the incentive value of high valenced sources may play a reduced role, i. e., a high authoritarian person may not be any more motivated to accept the communication than a low authoritarian person, since the former may feel that he can avoid social criticism by claiming that the high source was not clear enough about his intentions. As a result, we found no differences in attitude change as a function of authoritarianism when the high credibility source presented the ambiguous communication.

It seems, then, that we have isolated a condition where authoritarians do not change their attitudes to any greater extent than receivers lower in authoritarianism when a high credibility source presents the persuasive communication, viz., when the communication is relatively ambiguous.

McGuire (1968) conceptualizes attitude change as the result of a series of processes which include a reception factor and a yielding factor. The yielding factor is essentially the same as the acceptance factor posited by

Hovland et al. (1953). The reception factor incorporates attention to the communication and learning or comprehension of its content.

By considering the joint effects of the reception and yielding factors, McGuire (1968) purports to explain the inconsistent findings as regards the relationship between various personality variables and the degree of attitude change.

We will restrict our presentation to the personality variable of authoritarianism, and only with respect to the unequivocal communication condition.

If the persuasive communication is easy to understand, authoritarian persons are expected to learn the communication content to the same extent as persons lower in authoritarianism. When this is the case, the reception factor plays no role in the determination of the degree of attitude change, and change is primarily determined by the yielding factor. McGuire posits the assumption that yielding is positively related to authoritarianism, i. e., along the entire theoretical continuum of authoritarianism, the higher the F-score the greater the tendency to yield or accept the communication, and consequently the greater the tendency to change the attitude in the advocated direction.

In the present study, there was no difference in learning or recall of the points made in the communication as a function of authoritarianism. Consequently, given a high credibility source, high authoritarians yielded more and changed their attitudes to a greater extent than low authoritarians.

When a communication is relatively difficult to understand, McGuire

assumes that comprehension is inversely related to authoritarianism, i. e., the more authoritarian person learns the communication less well than the low authoritarian person. The additional assumption is made that attitude change is positively related to comprehension, i. e., one must first be able to understand what the communication is recommending before he can accept the recommendation and change his attitude accordingly.

Given a difficult communication presented by a high credibility source, if we consider the yielding gradient alone, one would predict more attitude change on the part of high authoritarians, as compared to low authoritarian receivers. And if we consider the comprehension or reception gradient alone, one would predict less attitude change on the part of high authoritarians, as compared to low authoritarians. However, says McGuire (1968), attitude change is determined by both yielding and reception factors. Thus we have a situation where one attitude change function is positively related to authoritarianism, and the other function is negatively related to authoritarianism. The crucial thesis advanced by McGuire is that attitude change is determined by the summation of these two functions, resulting in a curvilinear or nonmonotonic relationship between attitude change and authoritarianism. In this nonmonotonic relationship, the point of expected maximum attitude change occurs at an intermediate level in the entire axis or continuum of authoritarianism, i. e., maximum attitude change is expected to occur at the point of intersection between the reception and yielding gradients. Thus, it is predicted that when a high

source presents a communication that is relatively difficult to understand, an extreme authoritarian person will change his attitude to a smaller extent than a person who is less authoritarian. A recent study by Johnson, Torcivia, and Poprick (1968) provides some evidence in support of this prediction. These authors, using the same attitude issue as in this study, found a small but significant negative correlation between authoritarianism and learning of the communication, i. e. , reception was inversely related to authoritarianism. These authors found that given a high credibility source, the more authoritarian group tended to change their attitudes to a lesser extent than the group scoring lower in authoritarianism.

In the present study, there was no difference in attitude change between high and low authoritarian receivers, when the low credibility source presented the ambiguous or unequivocal communication. The same was true when the persuasive communication was presented by the anonymous source.

Previous research (Wagman, 1955; Harvey and Beverly, 1961) suggests that high authoritarian receivers change their attitudes to a lesser extent than low authoritarian receivers, when an anonymous source presents the persuasive communication. However, the issues employed in these studies were ego-involving for the Ss. The issue used by Wagman (1955) was that of racial segregation, and the one used by Harvey and Beverly (1961), the sale of whiskey, was an important issue for their Ss. It is possible, then, that when a communication is presented by an anonymous

source, or a low source, high authoritarian receivers will change their attitudes to a lesser extent than low authoritarian receivers, only when the issue is ego-involving, but not when the issue is not ego-involving to the receivers; it can be said that the issue used in the present study, frequency of tooth-brushing, is not a very ego-involving issue.

If the above is a tenable explanation, it must be said that when the source is of high credibility, high authoritarian receivers will be more motivated than low authoritarian receivers to accept the communication when the issue is not ego-involving. We say this because when the high source presented the unequivocal communication, high authoritarian receivers changed their attitudes to a greater extent than low authoritarian receivers. On the other hand, the depressing effects that a low source is presumed to have on the authoritarian person may be manifested only when the issue is ego-involving, but not when the issue is not ego-involving to the authoritarian person.

A replication of the present study using issues that are more ego-involving would provide us with a test for the above expectations.

## Appendix A

## PUBLIC OPINION POLL

We are studying how people think and feel about a number of important social, personal and health-related questions.

This study will be useful only if you answer honestly. Please cooperate.

## PART I

To answer the statements in this section you are to circle one of the choices preceding each statement.

If you agree very much circle A.

If you agree a little circle B.

If you disagree a little circle C.

If you disagree very much circle D.

After circling the letter, indicate your choice in the IBM answer sheet.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate letter, and indicate your answer in the IBM sheet.

Give your opinion on every statement.

- A B C D (1) People ought to pay more attention to new ideas, even if they seem to go against the American way of life.
- A B C D (2) It is highly unlikely that astrology will ever be able to explain anything.
- A B C D (3) Sex crimes, such as rape and attacks on children deserve more than mere imprisonment; such criminals ought to be publicly whipped or worse.
- A B C D (4) It is essential for learning or effective work that our teachers or bosses outline in detail what is to be done and how to do it.
- A B C D (5) No sane, normal, decent person could ever think of hurting a close friend or relative.

- A B C D (6) An urge to jump from high places is probably the result of unhappy personal experiences rather than anything inborn.
- A B C D (7) Most people don't realize how much our lives are controlled by plots hatched in secret places.
- A B C D (8) In spite of what you read about the wild sex life of people in important places, the real story is about the same in any group of people.
- A B C D (9) Nowadays more and more people are prying into matters that should remain personal and private.
- A B C D (10) Human nature being what it is, there will always be war and conflict.
- A B C D (11) One of the most important things children should learn is when to disobey authorities.
- A B C D (12) Most of our social problems could be solved if we could somehow get rid of the immoral, crooked, and feeble-minded people.
- A B C D (13) Most honest people admit to themselves that they have sometimes hated their parents.
- A B C D (14) No weakness or difficulty can hold us back if we have enough will power.
- A B C D (15) If it weren't for the rebellious ideas of youth there would be less progress in the world.
- A B C D (16) Books and movies ought to give a more realistic picture of life even if they show that evil sometimes triumphs over good.
- A B C D (17) What the youth needs most is strict discipline, rugged determination, and the will to work and fight for family and country.
- A B C D (18) The findings of science may some day show that many of our most cherished beliefs are wrong.
- A B C D (19) Every person should have complete faith in a supernatural power whose decisions he obeys without question.

A B C D (20) The artist and the professor are probably more important to society than the business man and the manufacturer.

## PART II

To answer the statements in this section, you are to circle the appropriate number in the scale following each statement.

If you agree strongly circle 15. The numbers between 9 and 15 reflect different degrees of agreement.

If you disagree strongly circle 1. The numbers between 7 and 1 reflect different degrees of disagreement.

If you are undecided circle 8. However, people usually have some opinion on any given statement. Therefore, do not use the number 8 unless you find it absolutely necessary to do so.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate number. Give your opinion on every statement.

1. Everyone should see his doctor at least once a year.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

2. 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
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

4. 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
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

5. 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
Disagree							Undecided							Agree
Strongly														Strongly

6. Even though one may not have any reason for suspecting TB (tuberculosis), it is a good idea to have frequent chest x-ray examinations.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

7. All things considered, getting an annual chest x-ray for detecting TB is a very wise practice.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

8. There are disadvantages to brushing one's teeth too often as well as never brushing them.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

9. Chest x-ray examinations for TB should be taken regularly and often.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

10. Abnormal people are ruled by their emotions; normal people by their reason.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

11. Close association with mentally ill people is liable to make even a normal person to break down.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

13. 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
Disagree							Undecided							Agree
Strongly														Strongly

14. As soon as a person shows signs of mental disturbance he should be hospitalized.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

15. One of the main causes of mental illness is lack of moral strength.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

16. It is best to prevent the more disturbed patients from mixing with those who are less sick.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

17. If everyone were to get a complete physical check-up once every year, more harm than good would result.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

18. It is rather foolish to call penicillin a "wonder drug" when there are so many disadvantages to its use.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

19. Few, if any, mental patients are capable of real friendliness.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/	/						
Disagree							Undecided							Agree
Strongly														Strongly

20. Most mental patients do not have the ability to tell right from wrong.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/	/						
Disagree							Undecided							Agree
Strongly														Strongly

## BACKGROUND INFORMATION

1. Name: \_\_\_\_\_
2. Address: \_\_\_\_\_
3. Phone Number: \_\_\_\_\_
4. Age: \_\_\_\_\_
5. Sex:           M           F (Circle One)
6. Religion: \_\_\_\_\_
7. Race: (Check One)
  - Caucasian \_\_\_\_\_
  - Negro \_\_\_\_\_
  - Oriental \_\_\_\_\_
  - Other \_\_\_\_\_ (Please Specify)
8. Father's Occupation: \_\_\_\_\_
9. College Major: \_\_\_\_\_
10. College: \_\_\_\_\_

Please write your name on the I. B. M. answer sheet.

Note: We are asking for your name, address, and phone number so that we may have a record of all those who have participated in this research. Your responses will never be identified personally, the data being reported in group form only, i. e., by sex, religion, age, race, etc. Your cooperation is greatly appreciated.

We will administer this questionnaire to other classes at this college. Thus, we urge you that you do not discuss the content of this survey to any student

outside this class. It is absolutely essential that you do not discuss this questionnaire in other classes. Please cooperate.

## Appendix B

## A STUDY OF EMPATHY

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is an excerpt from an extensive article written by Dr. Newland and published in the International Journal of Dental Hygiene. Dr. Newland is a dental surgeon, and a member of the Advisory Council to the President of the United States on Public Health. Dr. Newland is a frequent contributor of articles to various scientific journals.

Read this excerpt on the next page, and then answer the questionnaire following it as if you were Dr. Newland. This is not an easy task. Just do your best.

### A STUDY OF EMPATHY

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is a statement made by a person. Read this statement, and then answer the questionnaire following it as if you were this other person.

Read this statement on the next page and then answer the questionnaire following it as if you were this other person. This is not an easy task. Just do your best.

### A STUDY OF EMPATHY

We are investigating people's ability to empathize with others. That is, your ability to react to the world as if you were another person. On the next page is a brief article written by Mr. Newland and published in the health column of the Factory's Newsletter. Mr. Newland is an assembly worker in a tool-making factory. Mr. Newland, from time to time, likes to write brief articles on health, and occasionally one of these articles is accepted by the Factory's Newsletter, which is published monthly at the factory plant.

Read this article on the next page and then answer the questionnaire following it as if you were Mr. Newland. This is not an easy task. Just do your best.

## ON THE CARE OF TEETH

One of the causes of tooth decay is a general class of oral bacteria commonly known as "decay bacteria". A certain amount of these bacteria are found in the human mouth at all times. However, the heaviest concentration of these bacteria occur after eating. Some doctors and dentists have recommended brushing one's teeth after meals to counteract this concentration of bacteria after eating. There have also been claims that regular tooth brushing reduces tooth decay. A few doctors and dentists consider brushing one's teeth as being more important today because of the rich diet we consume. One should clearly keep in mind, however, the side effects of brushing one's teeth regularly. Frequent brushing wears away the enamel sheath. The enamel sheath is a protection against tooth decay provided to us by nature. A major cause of tooth decay is enamel deficiency. Frequent tooth brushing damages the gums. We often cause our gums to bleed when we brush our teeth. These injuries increase the likelihood of gum infection. It has been found that a common cause of gum infection is injury inflicted during tooth brushing. Also, a recent investigation found that a group of people who brush their teeth often have as many cavities as a group who brush their teeth occasionally.

Considering the side effects of frequent tooth brushing and some up-to-date evidence on this matter, I recommend that we should not brush our teeth after every meal.

### ON THE CARE OF TEETH

One of the causes of tooth decay is a general class of oral bacteria commonly known as "decay bacteria". A certain amount of these bacteria are found in the human mouth at all times. However, the heaviest concentration of these bacteria occur after eating. Some doctors and dentists have recommended brushing one's teeth after meals to counteract this concentration of bacteria after eating. There have also been claims that regular tooth brushing reduces tooth decay. A few doctors and dentists consider brushing one's teeth as being more important today because of the rich diet we consume. One should clearly keep in mind, however, the side effects of brushing one's teeth regularly. Frequent brushing wears away the enamel sheath. The enamel sheath is a protection against tooth decay provided to us by nature. A major cause of tooth decay is enamel deficiency. Frequent tooth brushing damages the gums. We often cause our gums to bleed when we brush our teeth. These injuries increase the likelihood of gum infection. It has been found that a common cause of gum infection is injury inflicted during tooth brushing. Also, a recent investigation found that a group of people who brush their teeth often have as many cavities as a group who brush their teeth occasionally.

DO NOT GO BACK TO THE PRECEDING PAGE

QUESTIONNAIRE

To answer the questionnaire below, you are to circle the appropriate number in the scale following each item as if you were the person who made the statement you have just read. We know how this person answered these items. We are interested to study how well you can match this person's answers.

Imagine that you are Dr. Newland and then read the instructions below.

If you agree strongly circle 15. The numbers between 9 and 15 reflect different degrees of agreement.

If you disagree strongly circle 1. The numbers between 7 and 1 reflect different degrees of disagreement.

If you are undecided circle 8. However, people usually have some opinion on a given statement. Therefore, do not use the number 8 unless you find it absolutely necessary to do so.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate number.

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

2. 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
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

3. There are disadvantages to brushing one's teeth too often as well as never brushing them.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/						/							/	
Disagree					Undecided					Agree				
Strongly										Strongly				

DO NOT GO BACK TO THE PRECEDING PAGE

QUESTIONNAIRE

To answer the questionnaire below, you are to circle the appropriate number in the scale following each item as if you were the person who made the statement you have just read. We know how this person answered these items. We are interested to study how well you can match this person's answers.

Imagine that you are this other person and then read the instructions below.

If you agree strongly circle 15. The numbers between 9 and 15 reflect different degrees of agreement.

If you disagree strongly circle 1. The numbers between 7 and 1 reflect different degrees of disagreement.

If you are undecided circle 8. However, people usually have some opinion on a given statement. Therefore, do not use the number 8 unless you find it absolutely necessary to do so.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate number.

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

2. 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
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

3. There are disadvantages to brushing one's teeth too often as well as never brushing them.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/									/			/		
Disagree									Undecided			Agree		
Strongly												Strongly		

DO NOT GO BACK TO THE PRECEDING PAGE

### QUESTIONNAIRE

To answer the questionnaire below, you are to circle the appropriate number in the scale following each item as if you were the person who made the statement you have just read. We know how this person answered these items. We are interested to study how well you can match this person's answers.

Imagine that you are Mr. Newland and then read the instructions below.

If you agree strongly circle 15. The numbers between 9 and 15 reflect different degrees of agreement.

If you disagree strongly circle 1. The numbers between 7 and 1 reflect different degrees of disagreement.

If you are undecided circle 8. However, people usually have some opinion on a given statement. Therefore, do not use the number 8 unless you find it absolutely necessary to do so.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate number.

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

2. 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
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

3. There are disadvantages to brushing one's teeth too often as well as never brushing them.

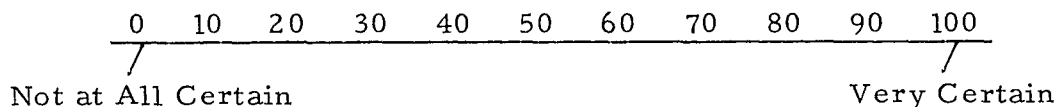
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/								/			/			
Disagree								Undecided			Agree			
Strongly											Strongly			

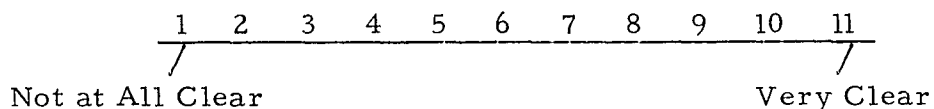
1. How confident, or how certain, are you that the author of the article answered the questionnaire as you have indicated?

Answer this question by circling the appropriate number in the scale below. If you are VERY CERTAIN circle 100. The values between 60 and 100 reflect different degrees of certainty. If you are NOT AT ALL CERTAIN circle 0. The values between 0 and 40 reflect different degrees of uncertainty.



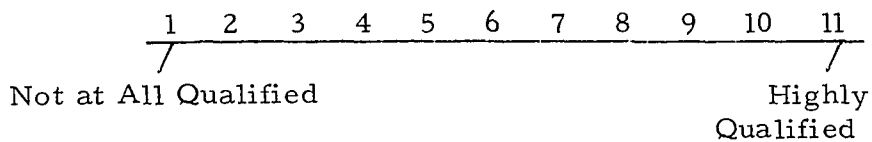
2. How clear was the author of the article in stating his own position on the question of brushing one's teeth after meals?

Answer this question by circling the appropriate number in the scale below. If you think this person was VERY CLEAR circle 11. The values between 7 and 11 reflect different degrees of clarity. If you think this person was NOT AT ALL CLEAR circle 1. The values between 1 and 5 reflect different degrees of unclarity.



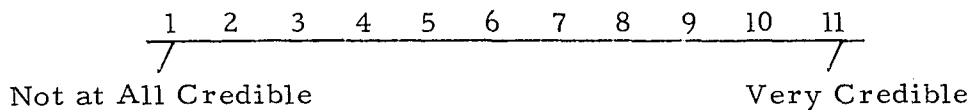
1. To what extent is the author of the article on brushing teeth qualified to speak on matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Highly Qualified, 1 stands for Not at All Qualified, and the Numbers in between stand for different degrees of qualification.



2. To what extent is the author of the article on brushing teeth a credible or trustworthy source of information concerning matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Very Credible, 1 stands for Not at All Credible, and the numbers in between stand for different degrees of source credibility.



## SITUATION TEST

We are also investigating how the ability to empathize is related to a measure of personality.

Step 1. List the first names of three persons you like:

Person A \_\_\_\_\_

Person B \_\_\_\_\_

Person C \_\_\_\_\_

List the first names of three persons you dislike:

Person X \_\_\_\_\_

Person Y \_\_\_\_\_

Person Z \_\_\_\_\_

Step 2. Think of a school subject which is important to you. We will refer to this school subject as Problem I.

Imagine that you are working on Problem I. Imagine further that one of the persons you listed above criticizes your work.

We want to find out how you would react if this happened.

You will be given 3 questions, each of which will have 2 choices (a or b). You are to circle the choice for each question that comes closest to your reaction to the criticism.

As you are working on Problem I, person A comes in and tells you that you are doing poorly.

1. a. This means that I am doing poorly.  
b. This means that I am probably doing alright.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem 1, person X comes in and tells you that you are doing poorly.

1. a. This means that I am doing poorly.  
b. This means I am probably doing alright.
2. a. I hope ~~he~~ (she) won't have to criticize ~~me~~ again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem I, person B comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I am doing well enough.
2. a. I ~~hope~~ he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem I, person C comes in and tells you that you are doing poorly.

1. a. This means I am doing poorly.  
b. This means I am probably doing alright.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I ~~hope~~ he (she) does not get the wrong idea about me.

As you are working on Problem I, person Z comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I ~~am~~ doing well enough.
2. a. I ~~hope~~ he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem I, person Y comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I am doing well enough.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

Step 3. Think of an activity which is not a school subject, but which is important to you. We will refer to this activity as Problem II.

Imagine that you are working on Problem II. Imagine further that one of the persons you listed earlier criticizes your work.

We want to find out how you would react if this happened.

You will be given 3 questions, each of which will have 2 choices (a or b). You are to circle the choice for each question that comes closest to your reaction to the criticism.

As you are working on Problem II, person B comes in and tells you that you are doing poorly.

1. a. This means I am doing poorly.  
b. This means I am probably doing alright.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem II, person Z comes in and tells you that you are doing poorly.

1. a. This means I am doing poorly.  
b. This means I am probably doing alright.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem II, person X comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I am doing well enough.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem II, person C comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I am doing well enough.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem II, person Y comes in and tells you that you are doing poorly.

1. a. This means I am doing poorly.  
b. This means I am probably doing alright.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

As you are working on Problem II, person A comes in and tells you that you are not doing well.

1. a. It could be that I am not doing well enough.  
b. It could be that I am doing well enough.
2. a. I hope he (she) won't have to criticize me again.  
b. He (She) is trying to show that he (she) is better than I am.
3. a. He (She) is just trying to give me a hard time.  
b. I hope he (she) does not get the wrong idea about me.

## Appendix C

## COLLEGE OPINION SURVEY

There is a current movement in the colleges throughout the United States which advocates a greater degree of student power. This movement has stimulated renewed interest in the opinions of the college student on all kinds of issues. This is a survey of how college students think and feel about a number of important social, personal and health-related questions.

This survey will be valid only if you answer honestly. Please cooperate.

To answer this questionnaire you are to circle one of the numbers in the scale following each statement.

If you agree strongly circle 15. The numbers between 9 and 15 reflect different degrees of agreement.

If you disagree strongly circle 1. The numbers between 7 and 1 reflect different degrees of disagreement.

If you are undecided circle 8. However, people usually have some opinion on a given statement. Therefore, do not use the number 8 unless you find it absolutely necessary to do so.

Read each statement. Decide if you agree or disagree. Decide how intensely you agree or disagree. Circle the appropriate number.

Give your opinion on every statement.

1. Practicing one's religion is merely a manifestation of one's insecurity with the cosmos.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided						Agree	
Strongly													Strongly	

2. I feel that I would get better care from a doctor whom I am paying than from a doctor who is being paid by the government.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree							Undecided						Agree	
Strongly													Strongly	

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
/							/							/
Disagree Strongly							Undecided						Agree Strongly	

4. I never hesitate to go out of my way to help someone in trouble.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
5. 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       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
6. Everyone should see his doctor at least once a year.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
7. If older people expect to be liked, their first step is to try to get rid of their irritating faults.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
8. There are disadvantages to brushing one's teeth too often as well as never brushing them.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
9. A compulsory health program is necessary because it brings the greatest good to the greatest number of people.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |
10. Most older people respect others' privacy and give advice only when asked.
- |          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
|----------|---|---|---|---|---|---|-----------|---|----|----|----|----|----|----------|
| 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8         | 9 | 10 | 11 | 12 | 13 | 14 | 15       |
|          |   |   |   |   |   |   |           |   |    |    |    |    |    |          |
| Disagree |   |   |   |   |   |   | Undecided |   |    |    |    |    |    | Agree    |
| Strongly |   |   |   |   |   |   |           |   |    |    |    |    |    | Strongly |

11. The only way to follow the Golden Rule is through the adherence to the practices of an organized religion.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

13. Civil Rights demonstrations should be staged even when there is a possibility that these demonstrations will lead to riots and bloodshed.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

14. Treatment under a compulsory health program would be mechanical and superficial.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

15. Even though one may not have any reason for suspecting tuberculosis, it is a good idea to have frequent x-ray examinations.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

16. The only just punishment for first degree murder and certain other atrocious crimes is the death penalty.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

17. 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
Disagree							Undecided							Agree
Strongly														Strongly

18. I always try to practice what I preach.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

19. I sometimes try to get even rather than forgive and forget.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

20. We should all have medical check-ups, not only when we feel ill, but also at regular intervals even when we feel well.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

21. An honest-thinking man cannot wholeheartedly follow religious dogma.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

22. There are a few exceptions, but in general most older people are pretty much alike.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

23. When I don't know something I don't at all mind admitting it.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

24. Only through the adherence to the practices of an organized religion will man be able to discover the true essence of life.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

25. I can remember "playing sick" to get out of something.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

26. When you think about it, older people have the same faults as anybody else.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

27. At times I have really insisted on having things my own way.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

28. A compulsory health program will produce a healthier and more productive population.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

29. I like to gossip at times.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

30. Under a compulsory health program there would be less incentive for young men to become doctors.

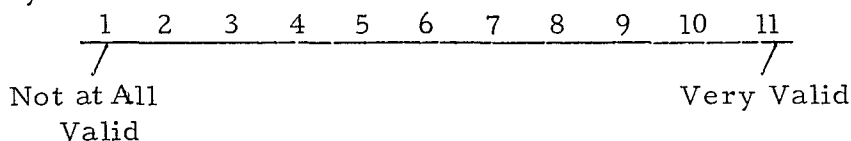
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disagree							Undecided							Agree
Strongly														Strongly

Please be completely honest in answering the following questions. Please cooperate.

1. Briefly describe any thought that occurred to you while answering the College Opinion Survey.

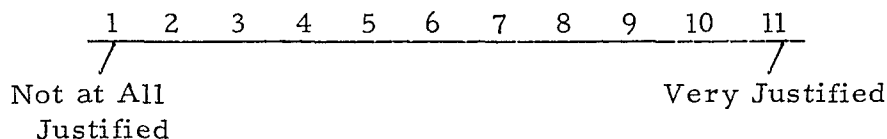
2. How true, or how valid, are the arguments presented by the authors of the article on Brushing Teeth?

Answer this question by circling the appropriate number in the scale below, where 11 stands for VERY VALID, and 1 stands for NOT AT ALL VALID. The numbers in between stand for different degrees of validity.



3. Is the recommendation made by the author of the article on Brushing Teeth justified by the facts he presented?

Answer this question by circling the appropriate number in the scale below, where 11 stands for VERY JUSTIFIED, and 1 stands for NOT AT ALL JUSTIFIED. The numbers in between stand for different degrees of justifiability.



4. Write as briefly as you can all points the author made in his article on Brushing Teeth.
5. Before you answered these questions, what did you think was the purpose of the studies in which you participated? Please be brief.

## Appendix D

PERCEIVED CREDIBILITY OF SOURCES  
FOR THE CONTROL GROUP

Imagine that you have read an article written by a Mr. Newland on the question of brushing one's teeth. Below is a description of Mr. Newland. Read this description and then answer the questions following it.

Mr. Newland is an assembly worker in a tool-making factory. Mr. Newland from time to time, likes to write brief articles on health, and occasionally an article is accepted by the Factory's Newsletter, a monthly publication at the factory plant.

1. To what extent is Mr. Newland qualified to speak on matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Highly Qualified, 1 stands for Not at All Qualified, and the numbers in between stand for different degrees of qualification.

1	2	3	4	5	6	7	8	9	10	11	
_____										/	
Not at All										Highly	
Qualified										Qualified	

2. To what extent is Mr. Newland a credible or trustworthy source of information concerning matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Very Credible, 1 stands for Not at All Credible, and the numbers in between stand for different degrees of source credibility.

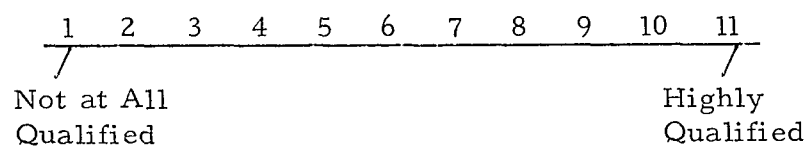
1	2	3	4	5	6	7	8	9	10	11	
_____										/	
Not at All										Very	
Credible										Credible	

Imagine that you have read an article written by a Dr. Newland on the question of brushing one's teeth. Below is a description of Dr. Newland. Read this description and then answer the questions following it.

Dr. Newland is a dental surgeon, and a member of the Advisory Council to the President of the United States on Public Health. Dr. Newland is a frequent contributor of articles to various scientific Journals.

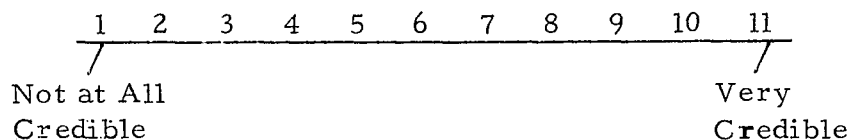
1. To what extent is Dr. Newland qualified to speak on matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Highly Qualified, 1 stands for Not at All Qualified, and the numbers in between stand for different degrees of qualification.



2. To what extent is Dr. Newland a credible or trustworthy source of information concerning matters of dental health?

Circle the appropriate number in the scale below, where 11 stands for Very Credible, 1 stands for Not at All Credible, and the numbers in between stand for different degrees of source credibility.



## Appendix E

## PRETEST OF MESSAGE AMBIGUITY MANIPULATION

The two communications were pretested in order to determine whether one communication was indeed more ambiguous than the other. The following criteria were chosen to determine whether the two communications differed with respect to the degree of message ambiguity: (1) There should be greater variability in the interpretation of the ambiguous communication as compared with the interpretation of the unequivocal communication; (2) And there should be less certainty about one's interpretation of the ambiguous communication as compared with the unequivocal communication, i. e., the more ambiguous the situation the less certain one is about his interpretation of that situation; (3) And finally, the unequivocal communication should be evaluated as being clearer in stating its position on the issue than the ambiguous communication.

In Pretest 1 we were only concerned with the first two criteria. First, the S's own position on the issue was obtained by having S answer the questionnaire on brushing teeth from his own point of view. One week later the ambiguous and unequivocal communications were presented to two groups of Ss, each group receiving only one communication. The Ss were told that E was interested in studying how well people can empathize with others, i. e., how well one can react to the world as if he were another person. S was asked to read the communication which was attributed to "John Doe", and, following that, to answer the four-item questionnaire

on brushing teeth, as he thought John Doe himself had answered the questionnaire. The instructions were practically the same as those used in the main study (see Appendix B). In answering the questionnaire as if he were John Doe, the S was essentially interpreting the communication. For the sake of exposition we will call the task of interpreting the communication as "placement" of the communication. As indicated in the methodology section, the score of communication placement could range from 4 to 60, and the higher the score of communication placement, the more opposed the communication is perceived to be with respect to brushing teeth often.

Following the placement of the communication, the S was asked to indicate on an 11-step rating scale ranging from 0 to 100, how certain he felt that the source, John Doe, answered the questionnaire as the S had indicated (see Appendix B). The procedures for Pretest 2 were the same as those in the first pretest, except for the following modifications. A third criterion for determining the degree of message ambiguity was added, viz., the S was asked to indicate on an 11-point rating scale the extent to which the communication clearly stated its position on the issue (see Appendix B). A second modification was to name the source as "another person" instead of "John Doe". We felt that the use of the term of John Doe in the first pretest may possibly have aroused suspicion in the S's mind that the study was not about the ability to empathize with others, i. e., the S may have thought that no one other than himself really answered the questionnaire on brushing teeth. By naming the source of

the communication as "another person" in Pretest 2, we hoped that the S would believe that someone had indeed answered the questionnaire and that his task was to match this other person's answers, i. e., we hoped that the S would be more involved with the task. Since the results of both pretests are practically the same, we combined the findings from both pretests. These findings are shown in Table E.

Table E

Measures Reflecting the Degree of  
Message Ambiguity

<u>Measures</u>	<u>Communication</u>			p
	Ambiguous	Unequivocal		
M	39.28	46.72	t = 2.34	< .05
Placement: s <sup>2</sup>	210.63	122.46	F = 1.72	< .05
Range	4-60	18-60		
Certainty: M	67.35	74.87	t = 1.97	< .05
N	88	81		

As can be seen in Table E, s<sup>2</sup>, the variance of placement of the ambiguous communication, is greater than the variance of placement of the unequivocal communication. In addition, the range of placement is greater for the ambiguous communication (4-60, the entire range) as compared to the unequivocal communication (18-60). Thus, it seems that the ambiguous communication does lend itself to a greater variety

of interpretations than is the case when the communication is unequivocal. Also, as shown in Table **E**, the Ss exposed to the ambiguous communication do feel less certain about their interpretation of that communication (67.35), than the Ss exposed to the unequivocal communication (74.87).

The mean placement of the ambiguous communication was 39.28, and for the unequivocal communication it was 46.72. The difference between these two means is statistically significant. In other words, the unequivocal communication was perceived as being more against brushing teeth often than was the ambiguous communication. This difference in placement between the two communications in no way interferes with the test of the stated hypotheses, since the planned comparisons among the experimental groups are to be done separately for the ambiguous communication and the unequivocal communication.

A possible explanation as to why the ambiguous communication is perceived as being more favorable towards the target issue than is the unequivocal communication, is that there may be a general tendency to assimilate an ambiguous communication towards one's own position on the issue (cf. Kelman and Eagly, 1965, p. 71); the Ss' own attitude towards brushing teeth often was on the average, 18.01, a score which reflects a favorable attitude towards brushing teeth often.

We would like to point out, however, that the ambiguous as well as the unequivocal communication were perceived as advocating positions against brushing teeth often. As indicated in the methodology section, a score of 32 may be said to reflect a "neutral" position towards the

target issue. As shown in Table E, both ambiguous and unequivocal communications are placed above 32, i.e., both communications are perceived as being against brushing teeth often.

In Pretest 2 the Ss were also asked to rate the extent to which the source clearly stated his position on the issue. The mean perceived clarity for the ambiguous communication was 5.25, and for the unequivocal communication the mean was 7.42. This mean-difference is statistically significant ( $t = 2.61$ , 78 d.f.,  $p < .05$ ).

It seems, then, that the present manipulation of message ambiguity met our three criteria for discerning a difference in degree of message ambiguity between two communications. That is, those Ss exposed to the ambiguous communication gave a wider variety of interpretations to that communication than was the case with the unequivocal communication; the Ss exposed to the ambiguous communication felt less certain about their interpretation of that communication than the Ss exposed to the unequivocal communication; finally, the Ss exposed to the ambiguous communication attributed a lesser degree of clarity to that communication than was the case with the unequivocal communication.

## Appendix F

Analysis of Covariance for the After  
Communication Attitude Corrected  
for Before Communication Attitude

Source	SS	df	MS	F	p
Source Credibility (A)	5473.69	2	2736.84	26.78	< .01
Message Ambiguity (B)	10.23	1	10.23	-----	-----
Authoritarianism (C)	22.84	1	22.84	-----	-----
A x B	1136.02	2	568.01	5.56	< .01
A x C	139.58	2	69.79		
B x C	95.57	1	95.57		
A x B x C	202.59	2	101.29		
Within	23191.59	227	102.16		

## Appendix G

MEAN ATTITUDE CHANGE FOR EACH OF THE FOUR  
ATTITUDE ITEMSTable G-1

Mean Attitude Change as a Function  
of Source Credibility and Message  
Ambiguity - Attitude Item 1  
(N = 40 in each group)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	3.95	2.72	6.37
Ambiguous	4.82	2.60	6.00

Item 1: Brushing one's teeth can become a harmful  
practice, if one does it often.

Table G-2

Mean Attitude Change as a Function  
of Source Credibility and Message  
Ambiguity - Attitude Item 2  
(N = 40 in each group)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	-0.65	+0.02	+3.05
Ambiguous	+0.47	-0.12	+1.50

Item 2: The best way to prevent tooth decay is to brush  
one's teeth frequently.

Table G-3

Mean Attitude Change as a Function  
of Source Credibility and Message  
Ambiguity - Attitude Item 3  
(N = 40 in each group)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	3.67	3.97	7.50
Ambiguous	4.77	4.50	5.17

Item 3: There are disadvantages to brushing one's teeth too often as well as never brushing them.

Table G-4

Mean Attitude Change as a Function  
of Source Credibility and Message  
Ambiguity - Attitude Item 4  
(N = 40 in each cell)

<u>Communication</u>	<u>Source Credibility</u>		
	Low	Anonymous	High
Unequivocal	2.10	0.90	4.77
Ambiguous	1.77	1.82	2.57

Item 4: Everyone should brush his teeth after every meal if at all possible.

## BIBLIOGRAPHY

- Adorno, T.W.; Frenkel-Brunswik, E.; Levinson, D.J.; Stanford, R.N.,  
The Authoritarian Personality. N. Y.; Harper, 1950.
- Allyn, J., Festinger, L. The effectiveness of unanticipated persuasive  
communications. Journal of abnormal and social Psychology, 1961,  
62: 35-40.
- Aronson, E.; Turner, J.A.; Carlsmith, J.M. Communicator credibility  
and communication discrepancy as determinants of opinion change.  
Journal of abnormal and social Psychology, 1963, 67: 31-36.
- Asch, S. The doctrine of suggestion, prestige, and imitation in social  
psychology. Psychological Review, 1948, 55: 250-276.
- Asch, S. Social Psychology. Englewood Cliffs, N.J.: Prentice-Hall, 1952.
- Choo, T. Communicator credibility and communication discrepancy as  
determinants of opinion change. Journal of social Psychology, 1964,  
64: 65-76.
- Christie, R.; Havel, J.; Seidenberg, B. Is the F scale irreversible?  
Journal of abnormal and social Psychology, 1958, 56: 143-159.
- Festinger, L. A Theory of Cognitive Dissonance. Evanston, Ill.: Row,  
Peterson, 1957.
- Fine, B.J. Conclusion-drawing, communicator credibility, and anxiety  
as factors in opinion change. Journal of abnormal and social Psychology.
- Freedman, J., Sears, D. Warning, distraction, and resistance to influence.  
Journal of personality and social Psychology, 1965, 1: 261-266.
- French, J.R.P., Jr. A formal theory of social power. Psychological Review,  
1956, 63: 181-194.
- Harvey, O.J.; Beverly, G.D. Some personality correlates of concept  
change through role playing. Journal of abnormal and social Psychology,  
1961, 63: 125-130.
- Harvey, O.J.; Kelley, H.H.; Shapiro, M.M. Reactions to unfavorable  
evaluations of the self made by other persons. Journal of Personality,  
1957, 25: 393-411.
- Heider, F. The Psychology of Interpersonal Relations. N. Y.: Wiley, 1958.

- Hovland, C.I., et. al. Communication and Persuasion. New Haven, Conn.: Yale U. Press, 1953.
- Hovland, C.I.; Harvey, O.J.; Sherif, M. Assimilation and contrast effects in reaction to communication and attitude change. Journal of abnormal and social Psychology, 1957, 55: 244-252.
- Hovland, C.I.; Lumsdaine, A.A.; Sheffield, F.D. Experiments on Mass Communication. Princeton: Princeton U. Press, 1949.
- Hovland, C.I.; Mandell, W. An experimental comparison of conclusion-drawing by the communicator and by the audience. Journal of abnormal and social Psychology, 1952, 47: 581-588.
- Hovland, C.I.; Mandell, W., et. al. The Order of Presentation in Persuasion. New Haven: Yale U. Press, 1957.
- Hovland, C.I.; Weiss, W. The influence of source credibility on communication effectiveness. Public Opinion Quarterly, 1951, 15: 635-650.
- Janis, I.L.; Field, P.B. A behavioral assessment of persuasibility; Consistency of individual differences. In Janis, I.L., et. al. (Eds.) Personality and Persuasibility. New Haven: Yale U. Press, 1959.
- Janis, I.L.; Hovland, C.I. et. al. Personality and Persuasibility, New Haven: Yale U. Press, 1959.
- Johnson, H.H.; Torcivia, J.M.; Poprick, M.A. Effects of source credibility on the relationship between authoritarianism and attitude change. Journal of personality and social Psychology, 1968, 9: 179-183.
- Kelley, H.H.; Woodruff, C.L. Member's reactions to apparent group approval of a counternorm communication. Journal of abnormal and social Psychology. 1956, 52: 67-74.
- Kelman, H.C. Compliance, identification, and internalization: three processes of opinion change. Journal of Conflict Resolution, 1958, 2: 51-60.
- Kelman, H.C. Process of opinion change. Public Opinion Quarterly, 1961, 25: 57-78.
- Kelman, H.C.; Eagly, A.H. Attitude toward the communicator, perception of communication content, and attitude change. Journal of personality and social Psychology, 1965, 1: 63-78.

- Kelman, H. C. ; Hovland, C.I. Reinstatement of the communicator in delayed measurement of opinion. Journal of abnormal and social Psychology, 1953, 48: 327-335.
- Lasswell, H.D. The structure and function of communication in society. In Bryson, L. (Ed. ), Communication of Ideas. New York: Harper, 1948.
- Lorge, I. Prestige, suggestion and attitudes. Journal of social Psychology, 1936, 7: 386-402.
- Manis, M. The interpretation of opinion statements as a function of message ambiguity and recipient attitudes. Journal of abnormal and social Psychology, 1961, 63: 76-81.
- Manis, M. The interpretation of opinion statements as a function of recipient attitude and source prestige. Journal of abnormal and social Psychology, 1961, 63: 82-86.
- McGuire, W.J. Personality and susceptibility to social influence. In E. F. Borgatta and W.W. Lambert (Eds. ), Handbook of Personality Theory and Research. Chicago: Rand McNally, 1968, in press.
- McGuire, W.J. The nature of attitudes and attitude change. In G. Lindzey and E. Aronson (Eds. ), The Handbook of Social Psychology, Vol. III, Addison-Wesley Publishing Co. , 1969.
- McGuire, W. J. ; Millman, S. Anticipatory belief lowering following fore-warning of a persuasive attack, Journal of personality and social Psychology, 1965, 2: 471-479.
- McGuire, W. J. ; Papageorgis, D. The relative efficacy of various types of prior belief-defense in producing immunity against persuasion. Journal of abnormal and social Psychology, 1961, 62: 327-337.
- Newcomb, T.M. An approach to the study of communicative acts. Psychological Review, 1953, 60: 393-404.
- Osgood, C.E. ; Tannenbaum, P.H. The principle of congruity in the prediction of attitude change, Psychological Review, 1955, 62: 42-55.
- Papageorgis, D. Warning and persuasion. Psychological Bulletin, 1968, 70: 271-282.
- Powell, F.A. Source credibility and behavioral compliance as determinants of attitude change. Journal of personality and social Psychology, 1965, 2: 669-676.

- Schroeder, H. M.; Hunt, D. E. Dispositional effects upon conformity at different levels of discrepancy. Journal of Personality, 1958, 26: 243-258.
- Sears, D. O. Effects of the assassination of President Kennedy on political partisanship. In B. S. Greenberg and E. P. Parker (Eds.), The Kennedy Assassination and the American Public. Stanford: Stanford Univ. Press, 1965, pp. 305-326.
- Sherif, C. W.; Sherif, M.; Nebergall, R. E. Attitude and Attitude Change: The social judgment-involvement approach, Philadelphia: W. B. Saunders, 1965.
- Sherif, M.; Hovland, C. I. Social Judgment. New Haven: Yale U. Press, 1961.
- Smith, E. The power of dissonance techniques to change attitudes. Public Opinion Quarterly, 1961, 25: 626-639.
- Tannenbaum, P. H. Initial attitude toward source and concept as factors in attitude change through communication. Public Opinion Quarterly, 1956, 20: 413-425.
- Taylor, W. L. Cloze Procedure: A new tool for measuring readability. Journalism Quarterly, 1953, 30: 415-443.
- Thistlethwaite, D. L.; de Haan, H.; Kamenetsky, J. The effects of "directive" and "non-directive" communication procedures on attitudes. Journal of abnormal and social Psychology, 1955, 51: 107-113.
- Wagman, M. Attitude change and the authoritarian personality. Journal of Psychology, 1955, 40: 3-24.
- Watts, W. A.; McGuire, W. J. Persistence of induced opinion change and retention of the inducing message contents. Journal of abnormal and social Psychology, 1964, 68: 233-241.
- Weiss, W. Opinion congruence with a negative source on one issue as a factor influencing agreement on another issue. Journal of abnormal social Psychology, 1957, 54: 180-186.
- Weiss, W. The effects of a communication on attitude change and scale judgments. Journal of abnormal and social Psychology, 1961, 62: 133-140.
- Winer, B. J. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1962.

Zimbardo, P.; Weisenberg, M.; Firestone, I.; Levy, B. Communicator effectiveness in producing public conformity and private attitude change. Journal of Personality, 1965, 33: 233-255.

## AUTOBIOGRAPHICAL NOTE

I received my B. A. degree from Brooklyn College, 1961, cum laude with honors in Psychology. In my senior year I assisted Dr. David Raab in an experiment as partial fulfillment for an honors course.

I received the degree of Master of Arts in Psychology in 1964 from The City University of New York. The thesis was in the area of Impression Formation. I have been research assistant to Dr. Marvin Zuckerman in his work on the effects of sensory deprivation; Dr. Harold Proshansky in his study of the adolescent's cognitions of work and play; Dr. James Bieri in his work on cognitive complexity and social judgment.

I have taught at Brooklyn College for the last three years courses in Statistics, Social Psychology, and Applied Social Psychology.

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