

The Influence of Source Credibility on Communication Effectiveness*

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In a new test of the process of forgetting, the authors found that subjects, at the time of exposure, discounted material from "untrustworthy" sources. In time, however, the subjects tended to disassociate the content and the source with the result that the original

scepticism faded and the "untrustworthy" material was accepted. Lies, in fact, seemed to be remembered better than truths.

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AN important but little-studied factor in the effectiveness of communication is the attitude of the audience toward the communicator. Indirect data on this problem come from studies of "prestige" in which subjects are asked to indicate their agreement or disagreement with statements which are attributed to different individuals.¹ The extent of agreement is usually higher when the statements are attributed to "high prestige" sources. There are few studies in which an identical communication is presented by different communicators and the relative effects on opinion subsequently measured without explicit reference to the position taken by the communicator. Yet the latter research setting may be a closer approximation of the real-life situation to which the results of research are to be applied.

In one of the studies reported by Hovland, Lumsdaine and Sheffield, the effects of a communication were studied without reference to the source of the items comprising the opinion questionnaire. They found that opinion changes following the showing of an Army orienta-

* This study was done as part of a coordinated research project on factors influencing changes in attitude and opinion being conducted at Yale University under a grant from the Rockefeller Foundation. (See Hovland, C. I., "Changes in Attitude Through Communication," *Journal of Abnormal and Social Psychology*, Vol. 46 (1951), pp. 424-437.) The writers wish to thank Prof. Ralph E. Turner for making his class available for the study.

¹ See e.g. Sherif, M., "An Experimental Study of Stereotypes," *Journal of Abnormal and Social Psychology*, Vol. 29 (1935), pp. 371-375; Lewis, H. B., "Studies in the Principles of Judgments and Attitudes": IV. The Operation of "Prestige Suggestion," *Journal of Social Psychology*, Vol. 14 (1941), pp. 229-256; Asch, S. E., "The Doctrine of Suggestion, Prestige, and Imitation in Social Psychology," *Psychological Review*, Vol. 55 (1948), pp. 250-276.

tion film were smaller among the members of the audience who believed the purpose of the film was "propagandistic" than among those who believed its purpose "informational."² But such a study does not rule out the possibility that the results could be explained by general predispositional factors; that is, individuals who are "suspicious" of mass-media sources may be generally less responsive to such communications. The present study was designed to minimize the aforementioned methodological difficulties by experimentally controlling the source and by checking the effects of the source in a situation in which the subject's own opinion was obtained without reference to the source.

A second objective of the present study was to investigate the extent to which opinions derived from high and low credibility sources are maintained over a period of time. Hovland, Lumsdaine and Sheffield showed that some opinion changes in the direction of the communicator's position are larger after a lapse of time than immediately after the communication. This they refer to as the " sleeper effect." One hypothesis which they advanced for their results is that individuals may be suspicious of the motives of the communicator and initially discount his position, and thus may evidence little or no immediate change in opinion. With the passage of time, however, they may remember and accept *what* was communicated but not remember *who* communicated it. As a result, they may then be more inclined to agree with the position which had been presented by the communicator. In the study referred to, only a single source was used, so no test was available of the differential effects when the source was suspected of having a propagandistic motive and when it was not. The present experiment was designed to test differences in the retention, as well as the acquisition, of identical communications when presented by "trustworthy" and by "untrustworthy" sources.

PROCEDURE

The overall design of the study was to present an identical communication to two groups, one in which a communicator of a generally "trustworthy" character was used, and the other in which the communicator was generally regarded as "untrustworthy." Opinion ques-

² Hovland, C. I., A. A. Lumsdaine and F. D. Sheffield, *Experiments on Mass Communication*. Princeton: Princeton University Press, 1949, pp. 101f.

tionnaires were administered before the communication, immediately after the communication, and a month after the communication.

Because of the possibility of specific factors affecting the relationship between communicator and content on a single topic, four different topics (with eight different communicators) were used. On each topic two alternative versions were prepared, one presenting the "affirmative" and one the "negative" position on the issue. For each version one "trustworthy" and one "untrustworthy" source was used. The topics chosen were of current interest and of a controversial type so that a fairly even division of opinion among members of the audience was obtained.

The four topics and the communicators chosen to represent "high credibility" and "low credibility" sources were as follows:

	<i>"High Credibility"</i> Source	<i>"Low Credibility"</i> Source
A. <i>Anti-Histamine Drugs:</i> Should the anti-histamine drugs continue to be sold without a doctor's prescription?	<i>New England Journal of Biology and Medicine</i>	Magazine A* [A mass circulation monthly pictorial magazine]
B. <i>Atomic Submarines:</i> Can a practicable atomic-powered submarine be built at the present time?	Robert J. Oppenheimer	<i>Pravda</i>
C. <i>The Steel Shortage:</i> Is the steel industry to blame for the current shortage of steel?	<i>Bulletin of National Resources Planning Board</i>	Writer A* [A widely syndicated anti-labor, anti-New Deal, "rightist" newspaper columnist]
D. <i>The Future of Movie Theaters:</i> As a result of TV, will there be a decrease in the number of movie theaters in operation by 1955?	<i>Fortune</i> magazine	Writer B* [An extensively syndicated woman movie-gossip columnist]

* The names of one of the magazines and two of the writers used in the study have to be withheld to avoid any possible embarrassment to them. These sources will be referred to hereafter only by the letter designations given.

In some cases the sources were individual writers and in others periodical publications, and some were fictitious (but plausible) and others actual authors or publications.

The "affirmative" and "negative" versions of each article presented an equal number of facts on the topic and made use of essentially the same material. They differed in the emphasis given the material and in the conclusion drawn from the facts. Since there were two versions for each topic and these were prepared in such a way that either of the sources might have written either version, four possible combinations of content and source were available on each topic.

The communication consisted of a booklet containing one article on each of the four different topics, with the name of the author or periodical given at the end of each article. The order of the topics within the booklets was kept constant. Two trustworthy and two untrustworthy sources were included in each booklet. Twenty-four different booklets covered the various combinations used. An example of one such booklet-combination would be:

<i>Topic</i>	<i>Version</i>	<i>Source</i>
The Future of Movie Theaters	Affirmative	<i>Fortune</i>
Atomic Submarines	Negative	<i>Pravda</i>
The Steel Shortage	Affirmative	<i>Writer A</i>
Anti-Histamine Drugs	Negative	<i>New England Journal of Biology and Medicine</i>

The questionnaires were designed to obtain data on the amount of factual information acquired from the communication and the extent to which opinion was changed in the direction of the position advocated by the communicator. Information was also obtained on the subject's evaluation of the general trustworthiness of each source, and, in the after-questionnaires, on the recall of the author of each article.

The subjects were college students in an advanced undergraduate course in History at Yale University. The first questionnaire, given five days before the communication, was represented to the students as a general opinion survey being conducted by a "National Opinion Survey Council." The key opinion questions bearing on the topics selected for the communication were scattered through many other unrelated ones. There were also questions asking for the subjects' evaluations of the general trustworthiness of a long list of sources, which included the critical ones used in the communications. This evaluation was based on a 5-point scale ranging from "very trustworthy" to "very untrustworthy."

Since it was desired that the subjects not associate the experiment with the "before" questionnaire, the following arrangement was devised: The senior experimenter was invited to give a guest lecture to the class during the absence of the regular instructor, five days after the initial questionnaire. His remarks constituted the instructions for the experiment:

"Several weeks ago Professor [the regular instructor] asked me to meet with you this morning to discuss some phase of Contemporary Problems. He suggested that one interesting topic would be The Psychology of Communications. This is certainly an important problem, since so many of our attitudes and opinions are based not on direct experience but on what we hear over the radio or read in the newspaper. I finally agreed to take this topic but on the condition that I have some interesting live data on which to base my comments. We therefore agreed to use this period to make a survey of the role of newspaper and magazine reading as a vehicle of communication and then to report on the results and discuss their implications at a later session.

Today, therefore, I am asking you to read a number of excerpts from recent magazine and newspaper articles on controversial topics. The authors have attempted to summarize the best information available, duly taking into account the various sides of the issues. I have chosen up-to-date issues which are currently being widely discussed and ones which are being studied by Gallup, Roper and others interested in public opinion.

Will you please read each article carefully the way you would if you were reading it in your favorite newspaper and magazine. When you finish each article write your name in the lower right hand corner to indicate that you have read it through and then go on to the next. When you finish there will be a short quiz on your reaction to the readings.

Any questions before we begin?"

The second questionnaire, handed out immediately after the booklets were collected, differed completely in format from the earlier one. It contained a series of general questions on the subjects' reactions to the articles, gradually moving toward opinion questions bearing on the content discussed in the articles. At the end of the questionnaire there

was a series of fact-quiz items. Sixteen multiple choice questions, four on each content area, were used together with a question calling for the recall of the author of each of the articles.

An identical questionnaire was administered four weeks after the communication. At no prior time had the subjects been forewarned that they would be given this second post-test questionnaire.

A total of 223 subjects provided information which was used in some phase of the analysis. Attendance in the history course was not mandatory and there was considerable shrinkage in the number of students present at all three time periods. For the portions of the analysis requiring before-and-after information, the data derived from 61 students who were present on all three occasions were used. Thus for the main analysis a sample of 244 communications (four for each student) was available. Since different analyses permitted the use of differing numbers of cases, the exact number of instances used in each phase of the analysis is given in each table.

RESULTS

Before proceeding to the main analyses it is important to state the extent to which the sources selected on *a priori* grounds by the experimenters as being of differing credibility were actually reacted to in this manner by the subjects. One item on the questionnaire given before the communication asked the subjects to rate the trustworthiness of each of a series of authors and publications. Figure 1 gives the percentages of subjects who rated each of the sources "trustworthy."

FIGURE 1
CREDIBILITY OF SOURCES

TOPIC	SOURCE	N	PERCENT RATING SOURCE AS TRUSTWORTHY
ANTI-HISTAMINES	NEW ENGL. J BIOL & MED.	208	94.7%
	MAGAZINE A	222	5.9%
ATOMIC SUBMARINES	OPPENHEIMER	221	93.7%
	PRAVDA	223	1.3%
STEEL SHORTAGE	BULL. NAT. RES. PLAN BD	220	80.9%
	WRITER A	223	17.0%
FUTURE OF MOVIES	FORTUNE	222	89.2%
	WRITER B	222	21.2%

The first source named under each topic had been picked by the experimenters as being of high credibility and the second of low. It will be observed that there is a clear differentiation of the credibility in the direction of the initial selection by the experimenters. The differences between members of each pair are all highly significant (t 's range from 13 to 20). The results in Figure 1 are based on all of the subjects present when the preliminary questionnaire was administered. The percentages for the smaller sample of subjects present at all three sessions do not differ significantly from those for the group as a whole.

Differences in perception of communication of various audience sub-groups. Following the communication, subjects were asked their opinion about the fairness of the presentation of each topic and the extent to which each communicator was justified in his conclusion. Although the communications being judged were *identical*, there was a marked difference in the way the subjects responded to the "high credibility" and "low credibility" sources. Their evaluations were also affected by their personal opinions on the topic before the communication was ever presented. Audience evaluations of the four communications are presented in Table 1. In 14 of the 16 possible comparisons the "low-credibility" sources are considered less fair or less justified than the corresponding high credibility sources. The differences for the low credibility sources for the individuals initially holding an opinion different from that advocated by the communicator and those for the high credibility sources for individuals who initially held the same position as that advocated by the communicator are significant at less than the .004 level.³

EFFECT OF CREDIBILITY OF SOURCE ON ACQUISITION OF INFORMATION AND ON CHANGE IN OPINION

Information. There is no significant difference in the amount of factual information acquired by the subjects when the material is attributed to a high credibility source as compared to the amount learned

³The probability values given in the table, while adequately significant, are calculated conservatively. The two-tailed test of significance is used throughout, even though in the case of some of the tables it could be contended that the direction of the differences is in line with theoretical predictions, and hence might justify the use of the one-tail test. When analysis is made of *changes*, the significance test takes into account the internal correlation (Hovland, Sheffield and Lumsdaine, *op. cit.*, pp. 318ff.), but the analyses of cases of post-communication agreement and disagreement are calculated on the conservative assumption of independence of the separate communications.

when the same material is attributed to a low credibility source. Table 2 shows the mean number of items correct on the information quiz when material is presented by "high credibility" and "low credibility" sources.

TABLE 1

EVALUATION OF "FAIRNESS" AND "JUSTIFIABILITY" OF IDENTICAL COMMUNICATIONS WHEN PRESENTED BY "HIGH CREDIBILITY" AND "LOW CREDIBILITY" SOURCES AMONG INDIVIDUALS WHO INITIALLY AGREED AND INDIVIDUALS WHO INITIALLY DISAGREED WITH POSITION ADVOCATED BY COMMUNICATOR

A. PER CENT CONSIDERING AUTHOR "FAIR" IN HIS PRESENTATION*

Topic	High Credibility Source		Low Credibility Source	
	Initially Agree	Initially Disagree (or Don't know)	Initially Agree	Initially Disagree (or Don't Know)
Anti-Histamines	76.5%	50.0%	64.3%	62.5%
Atomic Submarines	100.0	93.7	75.0	66.7
Steel Shortage	44.4	15.4	12.5	22.2
Future of Movies	90.9	90.0	77.8	52.4
Mean	78.3%	57.9%	60.5%	51.9%
N=	46	76	43	79

B. PER CENT CONSIDERING AUTHOR'S CONCLUSION "JUSTIFIED" BY THE FACTS**

Topic	High Credibility Source		Low Credibility Source	
	Initially Agree	Initially Disagree (or Don't know)	Initially Agree	Initially Disagree (or Don't Know)
Anti-Histamines	82.4%	57.1%	57.1%	50.0%
Atomic Submarines	77.8	81.2	50.0	41.2
Steel Shortage	55.6	23.1	37.5	22.2
Future of Movies	63.6	55.0	55.6	33.3
Mean	71.7%	50.0%	51.2%	36.7%
N=	46	76	43	79

* Question: Do you think that the author of each article was fair in his presentation of the facts on both sides of the question or did he write a one-sided report?

** Question: Do you think that the opinion expressed by the author in his conclusion was justified by the facts he presented or do you think his opinion was not justified by the facts?

Opinion. Significant differences were obtained in the extent to which opinion on an issue was changed by the attribution of the material to different sources. These results are presented in Table 3. Subjects changed their opinion in the direction advocated by the communicator in a significantly greater number of cases when the material was attributed to a "high credibility" source than when attributed to a "low credibility" source. The difference is significant at less than the .01 level.

TABLE 2

MEAN NUMBER OF ITEMS CORRECT ON FOUR-ITEM INFORMATION QUIZZES ON EACH OF FOUR TOPICS WHEN PRESENTED BY "HIGH CREDIBILITY" AND "LOW CREDIBILITY" SOURCES. (TEST IMMEDIATELY AFTER COMMUNICATION)

Topic	Mean Number of Items Correct			
	High Credibility Source		Low Credibility Source	
Anti-Histamines	(N=31)	3.42	(N=30)	3.17
Atomic Submarines	(N=25)	3.48	(N=36)	3.72
Steel Shortage	(N=35)	3.34	(N=26)	2.73
Future of Movies	(N=31)	3.23	(N=30)	3.27
Average	(N=122)	3.36	(N=122)	3.26
Per cent of items correct		84.0		81.5
ρ diff. M.			.35	

TABLE 3

NET CHANGES OF OPINION IN DIRECTION OF COMMUNICATION FOR SOURCES CLASSIFIED BY EXPERIMENTERS AS "HIGH CREDIBILITY" OR "LOW CREDIBILITY" SOURCES*

Topic	Net percentage of cases in which subjects changed opinion in direction of communication			
	High Credibility Sources		Low Credibility Sources	
Anti-Histamines	(N=31)	22.6%	(N=30)	13.3%
Atomic Submarines	(N=25)	36.0	(N=36)	0.0
Steel Shortage	(N=35)	22.9	(N=26)	-3.8
Future of Movies	(N=31)	12.9	(N=30)	16.7
Average	(N=122)	23.0%	(N=122)	6.6%
Diff.		16.4%		
ρ diff.		<.01		

* Net changes = positive changes *minus* negative changes.

From Figure 1 it will be recalled that less than 100 per cent of the subjects were in agreement with the group consensus concerning the trustworthiness of each source. The results presented in Table 3 were reanalyzed using the individual subject's own evaluation of the source as the independent variable. The effects on opinion were studied for those instances where the source was rated as "very trustworthy" or "moderately trustworthy" and for those where it was rated as "untrustworthy" or "inconsistently trustworthy." Results from this analysis are given in Table 4. The results, using the subject's own evaluation of the trustworthiness of the source, are substantially the same as those obtained when analyzed in terms of the experimenters' *a priori* classification (presented in Table 3). Only minor shifts were obtained. It

appears that while the variable is made somewhat "purer" with this analysis this advantage is offset by possible increased variability attributable to unreliability in making individual judgments of the trustworthiness of the source.

TABLE 4

NET CHANGES OF OPINION IN DIRECTION OF COMMUNICATION FOR SOURCES JUDGED "TRUSTWORTHY" OR "UNTRUSTWORTHY" BY INDIVIDUAL SUBJECTS.

Topic	Net percentage of cases in which subjects changed opinion in direction of communication			
	"Trustworthy" Sources		"Untrustworthy" Sources	
Anti-Histamines	(N=31)	25.5%	(N=27)	11.1%
Atomic Submarines	(N=25)	36.0	(N=36)	0.0
Steel Shortage	(N=33)	18.2	(N=27)	7.4
Future of Movies	(N=31)	12.9	(N=29)	17.2
Average	(N=120)	22.5%	(N=119)	8.4%
Diff.			14.1%	
pdiff.			<.03	

RETENTION OF INFORMATION AND OPINION IN RELATION TO SOURCE

Information. As was the case with the immediate post-communication results (Table 2), there is no difference between the retention of factual information after four weeks when presented by high credibility sources and low credibility sources. Results in Table 5 show the mean retention scores for each of the four topics four weeks after the communication.

TABLE 5

MEAN NUMBER OF ITEMS CORRECT ON FOUR-ITEM INFORMATION QUIZZES ON EACH OF FOUR TOPICS WHEN PRESENTED BY "HIGH CREDIBILITY" AND "LOW CREDIBILITY" SOURCES (RECALL FOUR WEEKS AFTER COMMUNICATION)

Topic	Mean Number of Items Correct			
	High Credibility Source		Low Credibility Source	
Anti-Histamines	(N=31)	2.32	(N=30)	2.90
Atomic Submarines	(N=25)	3.08	(N=36)	3.06
Steel Shortage	(N=35)	2.51	(N=26)	2.27
Future of Movies	(N=31)	2.52	(N=30)	2.33
Average	(N=122)	2.58	(N=122)	2.67
Per cent of items correct		64.5		66.7
pdiff.			.46	

Opinion. Extremely interesting results were obtained for the retention of opinion changes. Table 6 shows the changes in opinion from immediately after the communication to those obtained after the four-week interval. It will be seen that compared with the changes immediately after the communication, there is a *decrease* in the extent of agreement with the high credibility source, but an *increase* in the case of the low credibility source. This result, then, is similar to the "sleeper effect" found by Hovland, Lumsdaine and Sheffield.⁴ The results derived from Tables 3 and 6 are compared in Figure 2, which shows the changes in opinion from before the communication to immediately afterwards and from before to four weeks afterwards.

The loss with the "trustworthy" source and the gain with the "untrustworthy" source are clearly indicated. A parallel analysis using the individual's own evaluation of the source credibility (similar to the method of Table 4) showed substantially the same results.

TABLE 6

NET CHANGES OF OPINION FROM IMMEDIATELY AFTER COMMUNICATION TO FOUR WEEKS LATER IN DIRECTION OF "HIGH CREDIBILITY" AND "LOW CREDIBILITY" SOURCES

<i>Topic</i>	<i>High Credibility Source (A)</i>	<i>Low Credibility Source (B)</i>	<i>Difference (B-A)</i>
Anti-Histamines	(N=31) -6.5%	(N=30) +6.7%	+13.2%
Atomic Submarines	(N=25) -16.0	(N=36) +13.9	+29.9
Steel Shortage	(N=35) -11.4	(N=26) +15.4	+26.8
Future of Movies	(N=31) -9.7	(N=30) -6.7	+3.0
Average	(N=122) -10.7%	(N=122) +7.4%	+18.1%
^p diff.			.001

Retention of name of source. One hypothesis advanced for the "sleeper effect" involved the assumption that forgetting of the source would be more rapid than that of the content. This is a most difficult point to test experimentally because it is almost impossible to equate retention tests for source and for content. It is, however, possible to make a comparison of the retention of the name of the source where the subjects initially agreed with the source's position and considered the communicator a "trustworthy" source, and those where they disagreed and considered the source "untrustworthy." Data on this point are presented in Table 7.

⁴ *Op. cit.*

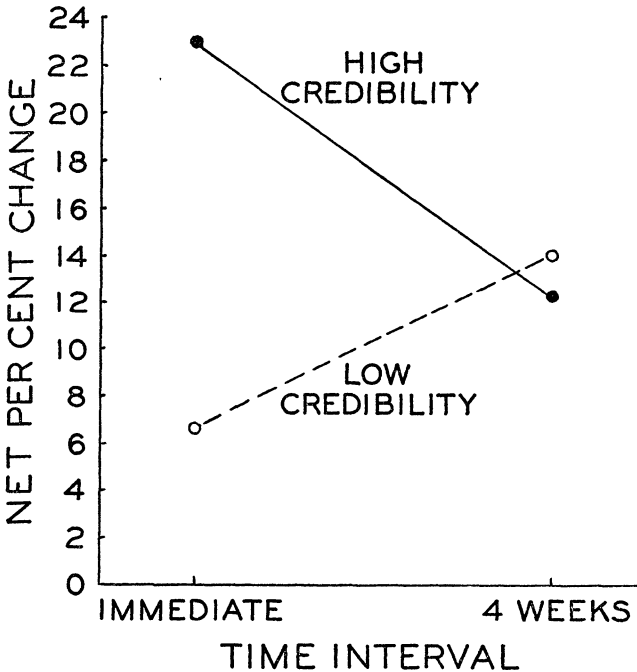
TABLE 7

RECALL OF SOURCE IMMEDIATELY AFTER COMMUNICATION AND AFTER FOUR WEEKS

Recall	Trustworthy Source		Untrustworthy Source	
	Individuals initially holding position advocated by communicator	Individuals not initially holding position advocated by communicator	Individuals initially holding position advocated by communicator	Individuals not initially holding position advocated by communicator
Immediately after communication	93.0% (N=43)	85.7% (N=77)	93.0% (N=43)	93.4% (N=76)
Four weeks after communication	60.5 (N=43)	63.6 (N=77)	76.7 (N=43)	55.3 (N=76)

FIGURE 2.

“RETENTION” OF OPINION. CHANGES IN EXTENT OF AGREEMENT WITH POSITION ADVOCATED BY “HIGH CREDIBILITY” AND “LOW CREDIBILITY” SOURCES.



No clear differences are obtained immediately after the communication, indicating comparable initial learning of the names of the different sources. At the time of the delayed test, however, there appears to be a clear difference in the retention of the names of “untrustworthy”

sources for the group initially agreeing with the communicator's position as compared with that for the group disagreeing with the communicator's position ($p = .02$). Since the "sleeper effect" occurs among the group which initially disagrees with an unreliable source (but subsequently comes to agree with it), it is interesting to note that among this group the retention of the source name is poorest of all. Too few subjects were available to check whether retention was poorer among the very subjects who showed the "sleeper effect," but no clear-cut difference could be seen from the analysis of the small sample.

DISCUSSION

Under the conditions of this experiment, neither the acquisition nor the retention of factual information appears to be affected by the trustworthiness of the source. But changes in opinion are significantly related to the trustworthiness of the source used in the communication. This difference is in line with the results of Hovland, Lumsdaine and Sheffield, who found a clear distinction between the effects of films on information and opinion.⁵ In the case of factual information they found that differences in acquisition and retention were primarily related to differences in learning ability. But in the case of opinion, the most important factor was the degree of "acceptance" of the material. In the present experiment, this variable was probably involved as a consequent of the variation in source credibility.

The present results add considerable detail to the Hovland-Lumsdaine-Sheffield findings concerning the nature of the "sleeper effect." While they were forced to make inferences concerning possible suspicion of the source, this factor was under experimental control in the present experiment and was shown to be a significant determinant of subsequent changes in opinion. In terms of their distinction between "learning" and "acceptance," one could explain the present results by saying that the content of the communication (premises, arguments, etc.) is learned and forgotten to the same extent regardless of the communicator. But the extent of opinion change is influenced by both learning and acceptance, and the effect of an untrustworthy communicator is to interfere with the acceptance of the material ("I know what he is saying, but I don't believe it"). The aforementioned authors suggest that this interference is decreased with the passage of time, and at a more

⁵ *Ibid.*

rapid rate than the forgetting of the content which provides the basis for the opinion. This could result in substantially the same extent of agreement with the position advocated by trustworthy and by untrustworthy sources at the time of the second post-test questionnaire. In the case of the trustworthy source, the forgetting of the content would be the main factor in the decrease in the extent of opinion change. But with an untrustworthy source the reduction due to forgetting would be more than offset by the removal of the interference associated with "non-acceptance." The net effect would be an increase in the extent of agreement with the position advocated by the source at the time of the second post-communication questionnaire. The present results are in complete agreement with this hypothesis; there is a large difference in extent of agreement with trustworthy and untrustworthy sources immediately after the communication, but the extent of agreement with the two types of source is almost identical four weeks later.

The Hovland-Lumsdaine-Sheffield formulation makes forgetting of the source a critical condition for the "sleeper" phenomenon. In the present analysis the critical requirement is a decreased tendency over time to reject the material presented by an untrustworthy source.⁶ This may or may not require that the source be forgotten. But the individual must be less likely with the passage of time to associate spontaneously the content with the source. Thus the passage of time serves to remove recall of the source as a mediating cue that leads to rejection.⁷

It is in this connection that the methodological distinction mentioned earlier between the procedure used in this experiment and that customarily employed in "prestige" studies becomes of significance. In the present analysis, the untrustworthy source is regarded as a cue which is reacted to by rejection. When an individual is asked for his opinion at the later time he may not spontaneously remember the position held by the source. Hence the source does not then constitute a

⁶In the present analysis' the difference in effects of trustworthy and untrustworthy sources is attributed primarily to the *negative* effects of rejection of the untrustworthy source. On the other hand, in prestige studies the effects are usually attributed to the *positive* enhancement of effects by a high prestige source. In both types of study only a difference in effect of the two kinds of influence is obtained. Future research must establish an effective "neutral" baseline to answer the question as to the absolute direction of the effects.

⁷In rare instances there may also occur a change with time in the attitude toward the source, such that one remembers the source but no longer has such a strong tendency to discount and reject the material. No evidence for the operation of this factor in the present experiment was obtained; our data indicate no significant changes in the evaluation of the trustworthiness of the sources from before to after the communication.

cue producing rejection of his position. In the usual "prestige" technique, the attachment of the name of the source to the statement would serve to reinstate the source as a cue; consequently the differential effects obtained with the present design would not be expected to obtain. An experiment is now under way to determine whether the "sleeper effect" disappears when the source cue is reinstated by the experimenter at the time of the delayed test of opinion change.

Finally, the question of the generalizability of the results should be discussed briefly. In the present study the subjects were all college students. Other groups of subjects varying in age and in education will be needed in future research. Four topics and eight different sources were used to increase the generality of the "source" variable. No attempt, however, was made to analyze the differences in effects for different topics. Throughout, the effects of the "Atomic Submarine" and "Steel Shortage" communications were larger and more closely related to the trustworthiness of source variable than those of the "Future of Movies" topic. An analysis of the factors responsible for the differential effects constitutes an interesting problem for future research. A repetition of the study with a single after-test for each time interval rather than double testing after the communication would be desirable, although this variation is probably much less significant with opinion than with information questions. The generality of the present results is limited to the situation where individuals are experimentally exposed to the communication; i.e. a "captive audience" situation. An interesting further research problem would be a repetition of the experiment under naturalistic conditions where the individual himself controls his exposure to communications. Finally for the present study it was important to use sources which could plausibly advocate either side of an issue. There are other combinations of position and source where the communicator and his stand are so intimately associated that one spontaneously recalls the source when he thinks about the issue. Under these conditions, the forgetting of the source may not occur and consequently no "sleeper effect" would be obtained.

SUMMARY

1. The effects of credibility of source on acquisition and retention of communication material were studied by presenting identical content but attributing the material to sources considered by the audience

to be of "high trustworthiness" or of "low trustworthiness." The effects of source on factual information and on opinion were measured by the use of questionnaires administered before, immediately after, and four weeks after the communication.

2. The immediate reaction to the "fairness" of the presentation and the "justifiability" of the conclusions drawn by the communication is significantly affected by both the subject's initial position on the issue and by his evaluation of the trustworthiness of the source. Identical communications were regarded as being "justified" in their conclusions in 71.7 per cent of the cases when presented by a high credibility source to subjects who initially held the same opinion as advocated by the communicator, but were considered "justified" in only 36.7 per cent of the cases when presented by a low credibility source to subjects who initially held an opinion at variance with that advocated by the communicator.

3. No difference was found in the amount of factual information learned from the "high credibility" and "low credibility" sources, and none in the amount retained over a four week period.

4. Opinions were changed immediately after the communication in the direction advocated by the communicator to a significantly greater degree when the material was presented by a trustworthy source than when presented by an untrustworthy source.

5. There was a *decrease* after a time interval in the extent to which subjects agreed with the position advocated by the communication when the material was presented by trustworthy sources, but an *increase* when it was presented by untrustworthy sources.

6. Forgetting the name of the source is less rapid among individuals who initially agreed with the untrustworthy source than among those who disagreed with it.

7. Theoretical implications of the results are discussed. The data on post-communication changes in opinion (the "sleeper effect") can be explained by assuming equal *learning* of the content whether presented by a trustworthy or an untrustworthy source but an initial resistance to the *acceptance* of the material presented by an untrustworthy source. If this resistance to acceptance diminishes with time while the content which itself provides the basis for the opinion is forgotten more slowly, there will be an increase after the communication in the extent of agreement with an untrustworthy source.