

A TEST OF THE ANTENNA THEORY

by Fu-Shin Su

Introduction

Much of the information about public policy issues reported in the news media originates from sources - individuals and organizations - that have specific, clearly defined social and political points of view. Since their goal is to influence public opinion and social policy, the information they present to the news media very likely reflects those points of view. Often news stories contain a word or a phrase that identifies the ideological orientation of the source of the information and alerts the reader to the hidden political agenda.

This study was designed to investigate how those warnings affect the way that people read and remember information about public policy. We suspected that people who were told the information they were about to read came from a source that has a strong political stand would be alerted, would watch for evidence of that stand, would be more engaged in the reading process, would read more carefully, and therefore, would remember the information better than those who read the same information without such a warning.

In other words, a clearly labelled ideological source attribution would act as an antenna, improving the quality of the reception of the message. We also suspected that people whose own political views matched those of the source would respond differently from those whose views did not match. Those who were predisposed to agree with the message would tune in to see how the information fit with their own views, but if not surprised by what they read, they would lower their antennas slightly. On the other hand, those who were predisposed to disagree with the message would tune in to see what the opposition has to say and to refute the arguments presented -- a more active process requiring an extended antenna throughout

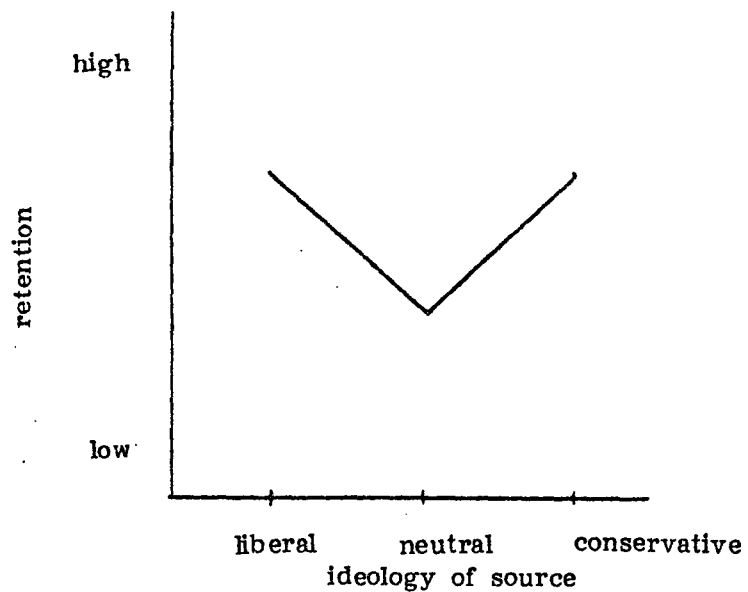
the transmission of the message.

Hypotheses

Hypothesis One

Our primary hypothesis is that the presence in a news story of a clearly identified ideological source will increase the reader's retention of the information presented in the story as compared to the retention of the same information when the source is neutral. See Figure 1.

Figure 1: Hypothesis One



Hypothesis Two

The second hypothesis is that retention will be related to the ideology of the source as follows:

***Conservative Source**

Retention will be the highest for those subjects whose own ideology is liberal. The

antenna theory predicts that the ideology of the subject and the source will cause the subject to carefully evaluate and argue with the information presented. Retention will be slightly lower for those whose own ideology is conservative. The subject will pay attention to the information presented to make sure that it fits with his or her own views and to incorporate it into his or her own storehouse of information and opinion. Because accepting information is a more passive process than refuting it, we expect that retention will not be as high as for the liberal subjects. Retention will be lowest for those whose own ideology is moderate. The subjects will be reacting only to the presence of an ideological source, not to an ideology that supports or conflicts with their own.

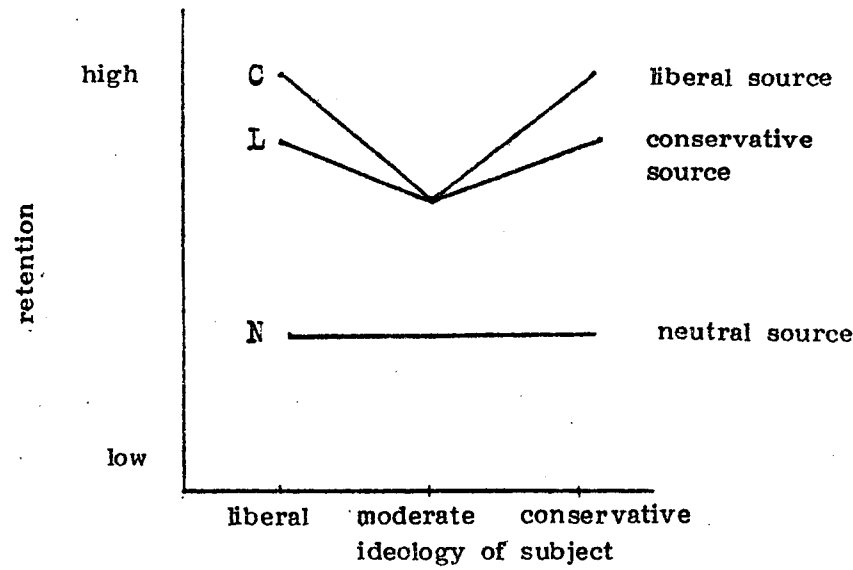
***Liberal Source**

Retention of information conveyed by a liberal source should be a mirror image of that for the conservative source. Retention will be highest for subjects with conservative ideology, slightly lower for those with a liberal ideology, and lowest for subjects with a moderate ideology.

*Neutral Source

We expect that retention levels for the information conveyed by a neutral source will be lower than those for either the liberal or conservative sources. Retention should not be affected by the ideology of the subject when the source of the information is ideologically neutral. See Figure 2.

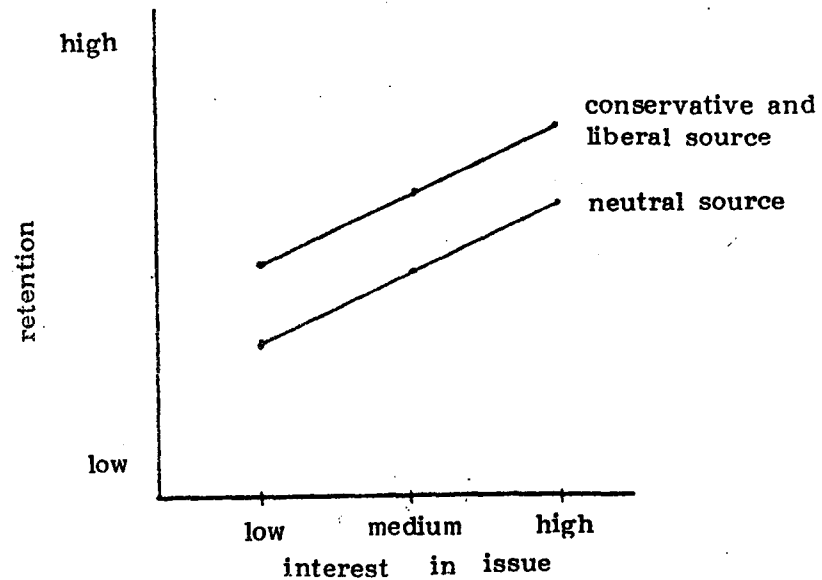
Figure 2: Hypothesis Two



Hypothesis Three

Subjects with high levels of interest in the issue of rental housing should remember more information than those with moderate or low interest. But, the antenna theory predicts that the presence of an ideological source should increase the retention levels of those in the experimental group in all interest levels. See Figure 3.

Figure 3: Hypothesis Three



Variables

Retention, the dependent variable, was first conceptualized as the ability to recall factual information from a news story. It was operationalized as the sum of the subject's scores on two open-ended questions (recall) and ten multiple-choice questions (recognition). A total score of eighteen points was possible, eight for recall and ten for recognition. Retention was broken down into its component parts to measure different levels of learning. Recall questions require that the subject reproduce, with little or no prompting, specific information. Recognition questions, on the other hand, allow the subject to use the content of the questions to remember information he or she may have partially learned.

The fact that S is unable to recall...does not necessarily imply that there was no effect from previous learning. Rather it may simply mean that the recall method is too "demanding" (or insensitive) to reveal and effects, and that a more sensitive measure may yield evidence for some retention.... The usual

superiority of recognition over recall is due, in part, to S's opportunities to utilize cues from partial learning during the recognition test.... Partial learning may enable S to recognize a whole item correctly even though he is unable to recall the item (Ellis, 1970 b:431-432).

Ideological bias of the source, the primary independent variable - and the experimental treatment - was conceptualized as the position of the source on the left-right political spectrum. Operationally, the two experimental introductions described the source as an employee of a prominent research organization that is usually considered to have a liberal (or conservative) point of view. He is further described as a former high-ranking official in a liberal Democratic (or conservative Republican) administration. The control group's introduction described the source as an employee of a prominent research organization. (See Exhibit A.)

The subject's ideology, the second independent variable, was conceptualized as the subject's position on the left-right political scale. Ideology was operationalized as the sum

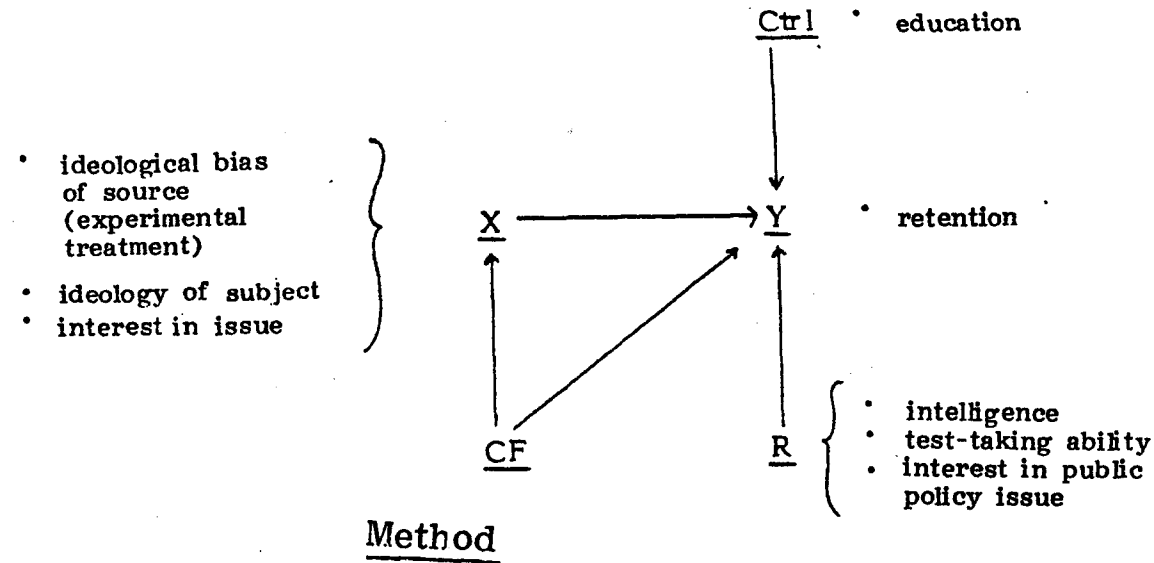
of the subject's responses to three questions about political and ideological attitudes and behavior.

Interest in the issue, the final independent variable, was conceptualized as the extent to which the subject seeks information on the issue of rental housing policy. It was operationalized as the sum of the subject's scores on three questions about the importance of rental housing policy and the subject's likelihood to read about it.

Other variables that may be related to our dependent variable, retention, are education, which was controlled in the experimental design, and intelligence, test-taking ability, and general interest in public policy issues, all of which we assumed to be randomly distributed in our experimental and control groups.

The relationships among these variables are summarized in Figure 4.

Figure 4: Variables of Interest



The data were gathered in an experiment; the subjects were 119 students in a University of Minnesota journalism class, consisting mostly of juniors and seniors. All subjects were asked to complete a questionnaire that measured their interest in the issue (rental housing policies) and their own political ideology. Next, all subjects read the same news story that summarized the results of a research study. The subjects received one of three randomly distributed introductions. One had a decidedly liberal source attribution, one decidedly conservative, and one neutral. (See Exhibits A and B.) After reading the news story, the subjects returned both the story and the questionnaire. With a second questionnaire we measured the amount of factual information the subjects remembered. Two

open-ended questions measured recall and ten multiple-choice questions measured recognition. To verify the effectiveness of the experimental treatment, the subjects were asked whether they remembered the source and its ideological orientation.

The article was chosen on the basis of subject, the type of information presented, and length. Rental housing policies are likely to be of interest to college students, most of whom are concerned with finding affordable temporary housing. Since the antenna theory is based on the subject's perception of a politically or ideologically biased source, the article had to present both factual information and policy recommendations based on that information. In order for retention measures to be valid, the information conveyed in the news story had to be new to the subjects, not something they might have learned elsewhere or that could be considered "common sense" knowledge. Using the same article for both experimental groups would eliminate the possibility that differences in retention scores between groups were caused by differences in the difficulty of the information or the questions. Therefore, the article could not be obviously biased in one direction or another. If the information it presented were clearly consistent with a liberal or a conservative view and had an opposite source attribution,

the possibility of "incredulity" (Osgood and Tannenbaum, 1955:47) could complicate the results of the experiment. The rental housing report met the neutrality requirement. It was actually a summary of a research report of the Brookings Institute. The recommendations presented had some superficial appeal to both conservatives and liberals - the prohibition of rent controls in order to encourage investment in rental housing and a voucher program for low-income families to be funded with a reduction in home-owner tax breaks. The length of the article was constrained by two factors: (1) Only twenty minutes were allowed for the experiment. (2) Ebbinghaus (1885) documents that not only is there a positive relationship between the amount of material and the time required to learn it, but that the time required increases exponentially with the amount of material. Increasing the amount of information would have decreased the ability of subjects to learn it. The questions were written to allow as wide a variation as possible in the limited time. In a pretest of seven people, the retention scores ranged from eight to eighteen.

The decision to measure the ideology of the subjects before, rather than after, the experiment was made in order to heighten their sensitivity to and awareness of their own

political views. Asking the subjects to define themselves politically before they read the articles from a political point of view. Their antennas should be alert and ready to be triggered by the experimental treatment.

Interest in the issue of rental housing was measured before the experiment in order to determine the pre-existing interest the subjects brought to the experiment, not the interest that the experiment itself might create.

Ebbinghaus' forgetting curve (1885) suggests that retention be tested immediately after reading the article rather than in a later session.

Analysis

Since the hypotheses in the experiment focus on differences in mean retention scores among groups, ANOVA (or analysis of variance) was chosen as the appropriate analysis technique. The F test of the ANOVA procedure checks the data against the null hypothesis that the means for all groups are the same. Rejection of the null hypothesis or a significant finding, offers support for the hypothesis that differences in scores among groups are due

to something other than chance, in this case, to the experimental treatment.

The ideology of the subjects and their interest in the issue were each measured with three five-point-scale questions. The three measures for each variable were highly correlated. The scores of the subjects on the two sets of questions were collapsed into liberal/moderate/conservative ideology and low/medium/high interest, as follows:

<u>Ideology of Subject</u>		<u>Interest in Issue</u>	
Liberal	12-15	High	12-15
Moderate	8-11	Medium	9-11
Conservative	3-7	Low	3-8

The above groupings were based on the distributions of scores for both variables being slightly skewed to the left. The mean scores were 10.05 for ideology of the subject and 10.47 for interest in the issue.

The analysis took place in two phases. First, eight subjects who completed less than half of the questions were dropped, leaving a total of 111. We tested the three hypotheses

with that group of subjects. The results follow.

Results

Hypothesis One

As the graphs on the accompanying tables show, the pattern of the mean scores for the two experimental and the control groups was the reverse of the hypothesis though, not significant difference at the .05 level. Next, total retention scores were divided into the subscores of recall and recognition; again, no significant differences emerged.

Hypothesis Two

The ANOVA procedure revealed no significant differences in mean scores for total retention, recall, or recognition among the nine cell conditions of subject and source ideology. Neither was there any significant interaction between the two independent variables.

Hypothesis Three

Next, we tested the relationship between the subjects' interest in the issue of rental housing and retention for the experimental and control groups. The hypothesized positive relationship between retention and interest was true only for the neutral source condition. However, none of the mean score differences were significant. And again, no interaction occurred.

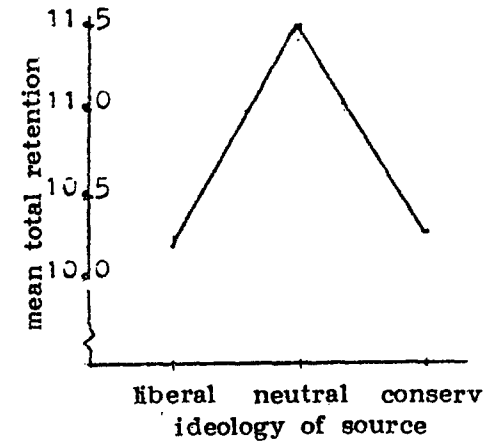
Graphs on three accompanying pages show results for all subjects.

For the next phase of the analysis, all subjects who could not correctly identify the ideological orientation of the source were dropped from the analysis. For approximately one-third of the subjects, the experimental treatment was not effective. That left 22 subjects in the liberal source condition, 26 in the conservative, and 20 in the neutral source condition. Deleting those subjects caused few changes in the pattern of the results, and the differences in mean scores were even less significant. The results for the subjects for whom treatment was effective are shown in the graphs on the second set of three accompanying pages.

RESULTS FOR ALL SUBJECTS
MEAN TOTAL RETENTION SCORES

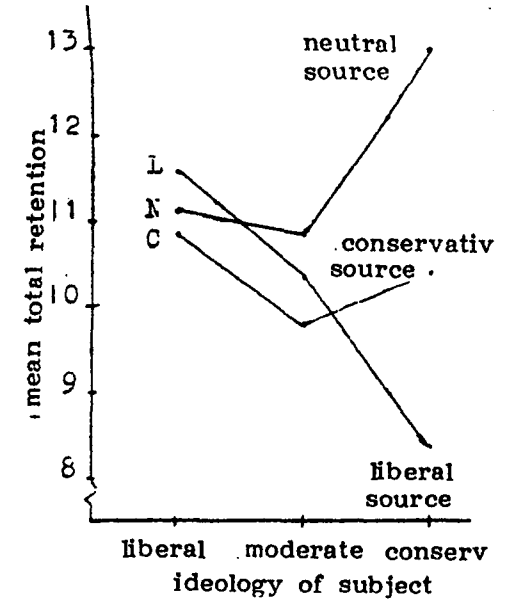
Hypothesis 1:

	<u>ideology of source</u>			
	<u>liberal</u> n=35	<u>neutral</u> n=38	<u>conserv</u> n=38	<u>total</u> n=111
mean retention score (maximum score: 18)	10.23	11.50	10.27	10.68
% correct	57%	64%	57%	59%



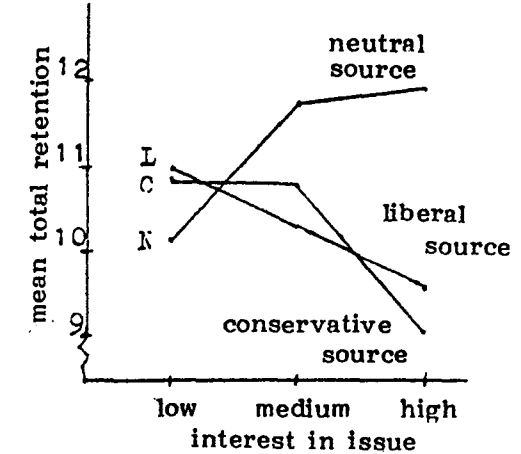
Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=35	moderate n=48	conserv n=28
liberal	(11) 11.64	(14) 10.42	(10) 8.40
neutral	(11) 11.09	(17) 10.88	(10) 13.00
conservative	(13) 10.85	(17) 9.76	(8) 10.38



Hypothesis 3:

ideology of source	interest in issue		
	low n=27	medium n=38	high n=46
liberal	(9) 11.00	(15) 10.27	(11) 9.55
neutral	(9) 10.22	(11) 11.82	(18) 11.95
conservative	(9) 10.78	(12) 10.75	(17) 9.04

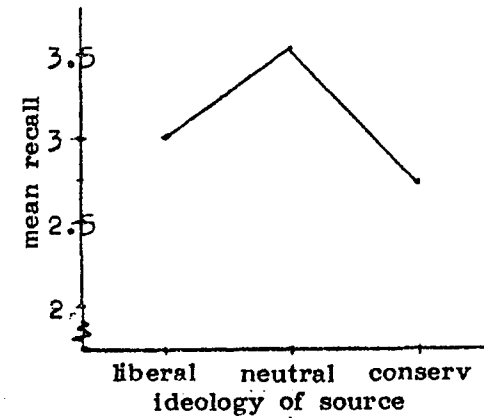


RESULTS FOR ALL SUBJECTS

MEAN RECALL SCORES

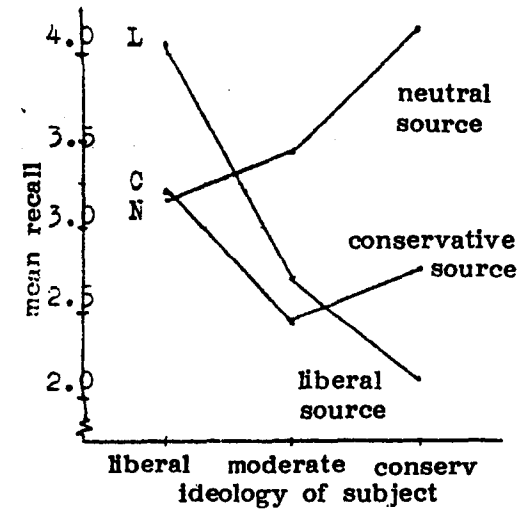
Hypothesis 1:

	<u>ideology of source</u>			<u>total</u> n=111
	<u>liberal</u> n=35	<u>neutral</u> n=38	<u>conserv</u> n=38	
mean recall score (max. score :8)	3.00	3.53	2.74	3.09
% correct	38%	44%	34%	39%



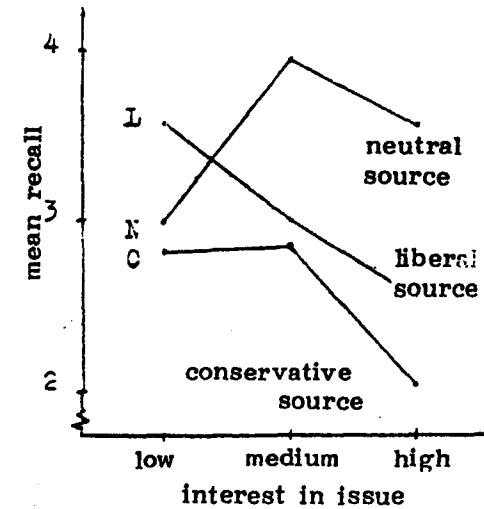
Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=35	moderate n=48	conserv n=28
liberal	(11) 4.09	(14) 2.71	(10) 2.20
neutral	(11) 3.18	(17) 3.41	(10) 4.10
conservative	(13) 3.23	(17) 2.35	(8) 2.75



Hypothesis 3:

ideology of source:	interest in issue		
	low n=27	medium n=38	high n=46
liberal	(9) 3.56	(15) 3.00	(11) 2.55
neutral	(9) 3.00	(11) 3.91	(18) 3.56
conservative	(9) 2.78	(12) 2.83	(17) 2.04

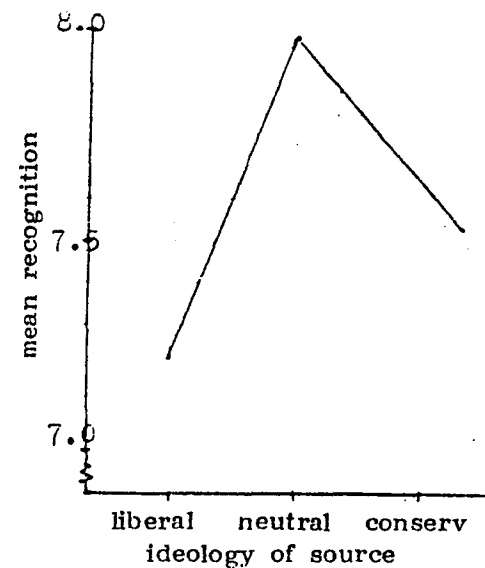


RESULTS FOR ALL SUBJECTS

MEAN RECOGNITION SCORES

Hypothesis 1:

	ideology of source			
	liberal n=35	neutral n=38	conserv n=38	total n=111
mean recognition score (maximum score: 10)	7.23	7.97	7.53	7.59
% correct	72%	80%	75%	76%

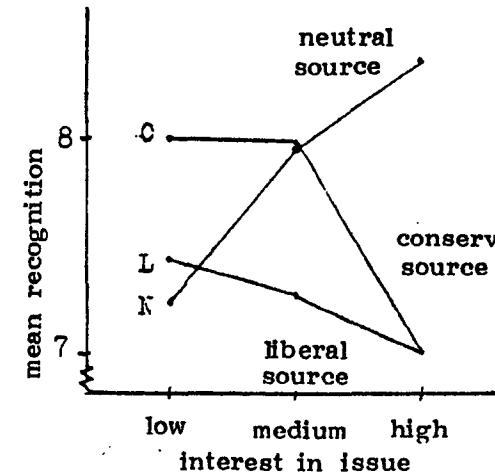
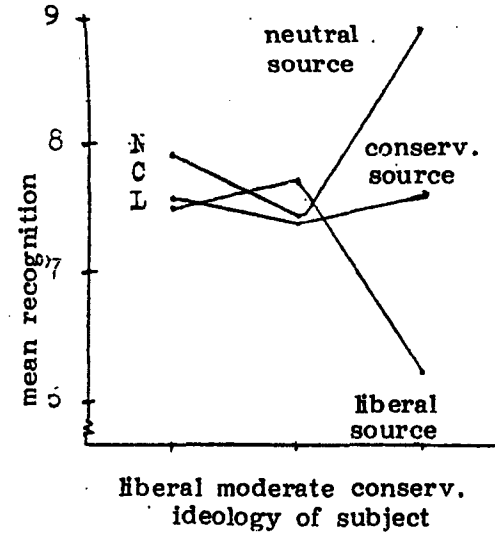


Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=35	moderate n=48	conserv n=28
liberal	(11) 7.55	(14) 7.71	(10) 6.20
neutral	(11) 7.91	(17) 7.47	(10) 8.90
conservative	(13) 7.62	(17) 7.41	(8) 7.63

Hypothesis 3:

ideology of source	interest in issue		
	low n=27	medium n=38	high n=46
liberal	(9) 7.44	(15) 7.27	(11) 7.00
neutral	(9) 7.22	(11) 7.91	(18) 8.39
conservative	(9) 8.00	(12) 7.92	(17) 7.00

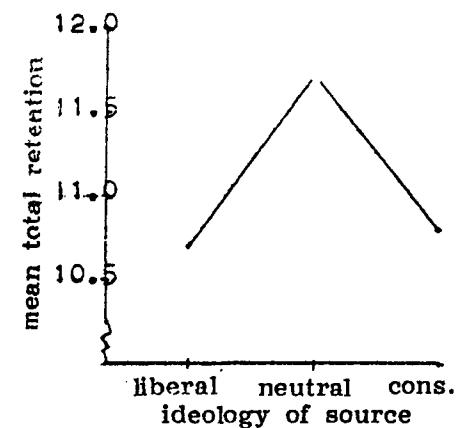


RESULTS FOR ALL SUBJECTS FOR WHOM TREATMENT WAS EFFECTIVE

MEAN TOTAL RETENTION SCORES

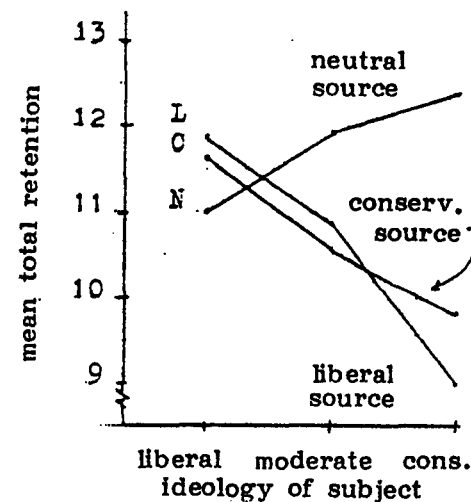
Hypothesis 1:

	ideology of source			
	liberal n=22	neutral n=20	conserv n=26	total n=68
mean retention score (maximum score: 18)	10.68	11.70	10.77	11.01
% correct	59%	65%	60%	61%



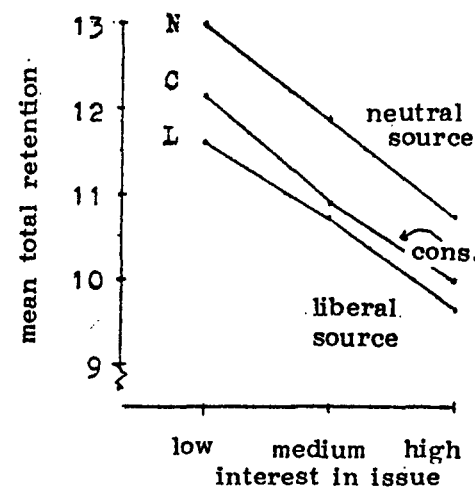
Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=22	moderate n=30	conserv n=16
liberal	(6) 11.83	(11) 10.82	(5) 9.00
neutral	(7) 11.00	(8) 11.88	(5) 12.40
conservative	(9) 11.67	(11) 10.55	(6) 9.83



Hypothesis 3:

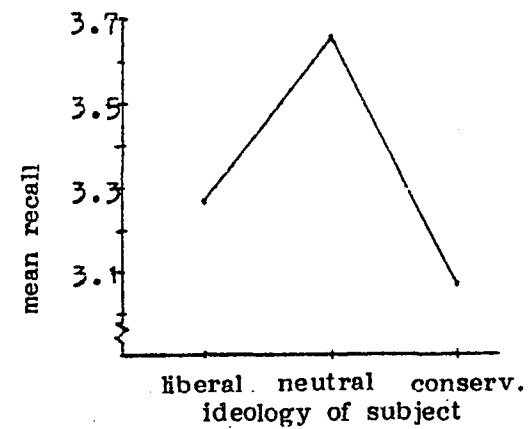
ideology of source	interest in issue		
	low n=35	medium n=28	high n=25
liberal	(5) 11.60	(11) 10.73	(6) 9.83
neutral	(5) 13.00	(7) 11.86	(8) 10.75
conservative	(5) 12.20	(10) 10.90	(11) 10.00



LTS FOR ALL SUBJECTS FOR WHOM TREATMENT WAS EFFECTIVEMEAN RECALL SCORES

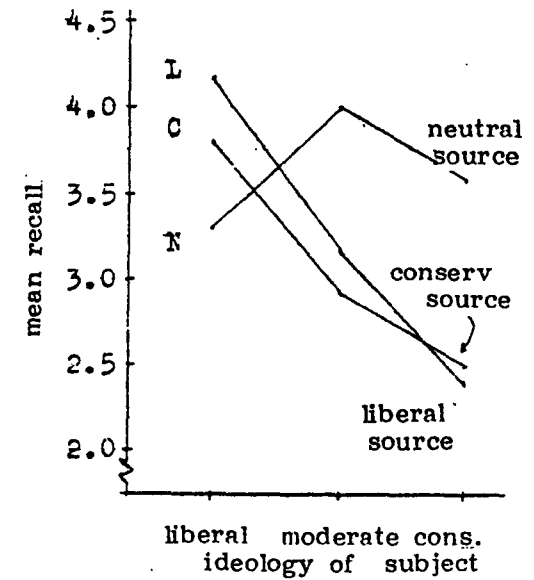
Hypothesis 1:

	<u>ology of source</u>			<u>total</u>
	<u>liberal</u>	<u>neutral</u>	<u>conserv</u>	
	<u>n=12</u>	<u>n=20</u>	<u>n=26</u>	<u>n=68</u>
mean recall score (max. score: 8)	3.27	3.65	3.08	3.31
% correct	46%	39%	41%	



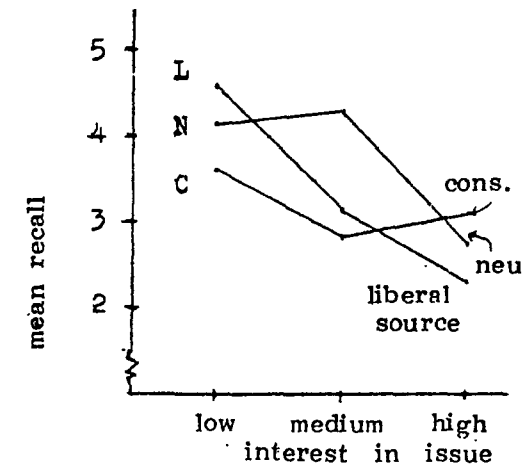
Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=22	moderate n=30	conserv n=16
liberal	(6) 4.17	(11) 3.18	(5) 2.40
neutral	(7) 3.29	(8) 4.00	(5) 3.60
conservative	(9) 3.78	(11) 2.82	(6) 2.50



Hypothesis 3:

ideology of source	interest in issue		
	low n=15	medium n=28	high n=25
liberal	(5) 4.60	(11) 3.18	(6) 2.33
neutral	(5) 4.20	(7) 4.29	(8) 2.75
conservative	(5) 3.60	(10) 2.80	(11) 3.09

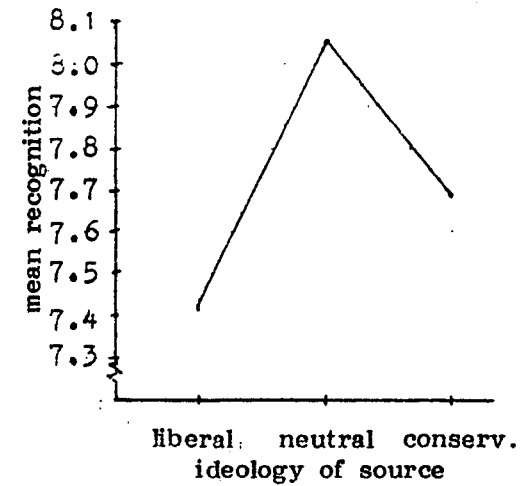


RESULTS FOR SUBJECTS FOR WHOM TREATMENT WAS EFFECTIVE

MEAN RECOGNITION SCORES

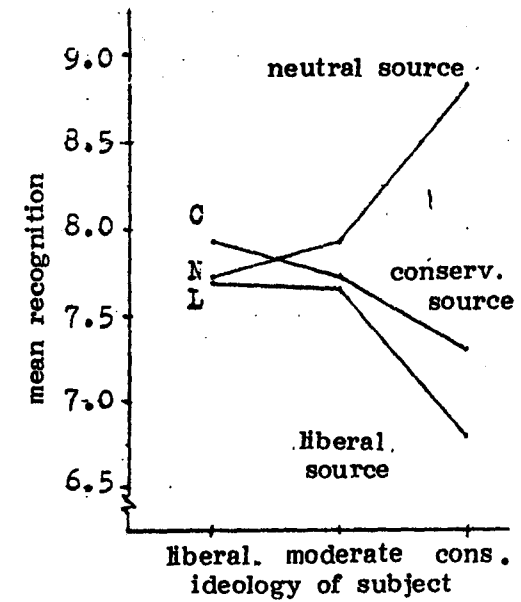
Hypothesis 1:

	<u>ideology of source</u>			
	<u>liberal</u> n=22	<u>neutral</u> n=20	<u>conserv</u> n=26	<u>total</u> n=68
mean recognition score (maximum score: 10)	7.41	8.05	7.69	7.71
% correct	74%	81%	77%	77%



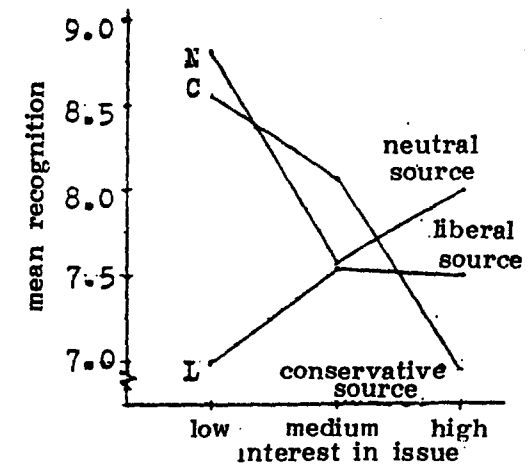
Hypothesis 2:

ideology of source	ideology of subject		
	liberal n=22	moderate n=30	conserv n=16
liberal	(6) 7.67	(11) 7.64	(5) 6.60
neutral	(7) 7.71	(8) 7.88	(5) 8.80
conservative	(9) 7.89	(11) 7.73	(6) 7.33



Hypothesis 3:

ideology of source	interest in issue		
	low n=15	medium n=28	high n=25
liberal	(5) 7.00	(11) 7.55	(6) 7.50
neutral	(5) 8.80	(7) 7.57	(8) 8.00
conservative	(5) 8.60	(10) 8.10	(11) 6.91



Discussion

Methodological Problems

We found no evidence to support the antenna theory, but several methodological problems should be considered. We were allowed no more than twenty minutes of classroom time to conduct the experiment. That severely limited the length and the complexity of the article, and consequently, the number and variety of test questions. More time and a longer test might have increased the variation of the subjects' retention scores and revealed greater differences between the experimental and control groups. A longer and more complicated article, or having all subjects read several articles, might have increased the effect of the hypothesized antenna. For a limited amount of information, the normal attention of the control group may have been as effective as the activated antenna of the experimental group.

If further research were done to test the antenna theory, we would recommend some modifications in design. An experimental treatment that places less overt emphasis on the source itself and relies more on the ideological content of the article may be a better method of testing the antenna theory. Two separate articles could be distributed to subjects, one

with a conservative source. However, we would advocate that the source attribution be imbedded in the article itself and be as unobtrusive as a source attribution is in a typical news article. A clear identification of an ideological source within an ideological article may activate the antennas of the subjects in a way that is less distracting, allowing them to concentrate on the information conveyed. Using two articles demands a more rigorous selection of articles for a legitimate comparison of experimental treatment groups. The two articles must be of approximately equal length, difficulty, interest, and include equally obvious source attributions. Another difficulty is formulating equal measurements of retention for the two articles.

Experimental Treatment

Our choice of treatment may have contributed to the problem. The actual pattern of relationships, which was the opposite of that hypothesized - the control group without antennas scored higher than the experimental groups with activated antennas - suggests that the antenna worked in a very different way. Psychologists have found evidence for

what they call interference in learning. "Other activities and experiences interfere with the retention of material that has been learned." (Dember and Jenkins, 1970: 399). Interference theory assumes that the material has been learned at one point in time, and the interference affects its retention. Since the antenna theory focuses on the effect of the antenna during the process of learning, interference theory does not apply. But, it does suggest a possible explanation for the pattern of results in this experiment.

A corollary to interference theory, distraction, may be applicable in the special case of an activated antenna.

Evidence indicates that distractions...are most annoying when one is trying to learn something new. Learning new material requires concentration on external stimuli..., and extraneous external stimuli interfere with that concentration" (Freedman et al., 1970: 174).

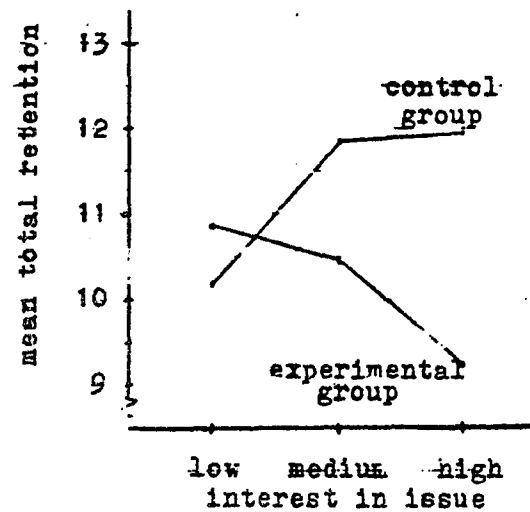
The highly activated antenna of the subjects in the experimental groups, focused on the ideological identity of the source, may have actually distracted them from learning the

factual information in the article. The experimental treatment may have tuned the antennas in to the wrong part of the message, causing static in reception (and retention) of the information.

Contrary to what might be expected, distraction appears most likely to occur in the high interest experimental group, as shown in Figure 5 (on the following page.)

Perhaps people most interested in the subject were most concerned about distortion of factual information by an ideologically biased source. Much of the earlier distraction research has dealt with persuasion. This suggests that further research be directed to the effects of distraction on retention.

Figure 5: Effect of Distraction on Mean Total Retention Scores Results for all Subjects



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Exhibit A

INTRODUCTIONS

Liberal

Below is an article about rental housing. Whenever you read a news story about a controversial issue, it's important to know where the information comes from. Very often reporters base their stories on information they receive from research organizations. These organizations (or "think tanks") typically have definite points of view and may provide only information that appears to support their own perspective. Reporters may or may not make clear the potential bias of the source of their information. So, as a reader of the news, it's important to pay attention to any clues the reporter may provide that would alert you to a hidden political agenda.

The following article presents the findings of a prominent research organization that issues reports on many social problems and is usually considered to have a liberal point of view. Anthony Downs, the author of the rental housing report, was formerly a high-ranking

official in a liberal Democratic administration. With that in mind, please read the article and evaluate the arguments presented.

Neutral

Below is an article about rental housing. It presents the findings of a prominent research organization that issues reports on many social problems. Please read the article and evaluate the arguments presented.

Conservative

Below is an article about rental housing. Whenever you read a news story about a controversial issue, it's important to know where the information comes from. Very often reporters base their stories on information they receive from research organizations. These organizations (or "think tanks") typically have definite points of view and may provide only information that appears to support their own perspectives. Reports may or may not make clear the potential bias of the source of their information. So, as a reader of the news, it's important to pay attention to any clues the reporter may provide that would alert you to a hidden political agenda.

The following article presents the findings of a prominent research organization that issues reports on many social problems and is usually considered to have a conservative point of view. Anthony Downs, the author of the rental housing report, was formerly a high-ranking official in a conservative Republican administration. With that in mind, please read the article and evaluate the arguments presented.

Exhibit B

No Room at the Inn: The Shortage of Rental Housing

According to Anthony Downs, it is likely that in the remainder of this decade demand for rental housing will continue to increase, growth in the supply of rental housing will remain slow, and the prices charged to renters will continue to jump up faster than the Consumer Price Index.

At present, just over one-third of all households occupy rented quarters. But this proportion can be expected to increase in the 1980s, writes Downs, because high real interest rates will discourage home purchases. In the 1970s, by contrast, real interest rates were substantially lower and the ranks of homeowners grew more rapidly.

As the demand for rental housing edges up, the supply is tightening. In the mid-1970s, the rate of construction of new rental units dropped sharply from the levels

characteristic of the early 1970s-and the rate has stayed at these lower levels ever since. Downs suggests that investment in rental housing had been profitable in those earlier years because of four factors: the availability of tax sheltering advantages, low real interest rates, the opportunity to enjoy high degrees of leveraging with borrowed funds, and the expectation of rapid appreciation in the value of rental units. While sheltering advantages remain, high real interest rates have now reduced the profitability of leveraging, and investors can no longer realistically expect rapid appreciation in property values.

That means that the profits of those who do develop new rental units now depend more heavily than in the past on rental income-which, Downs notes, is one reason why in every month since January, 1982, rents have risen more rapidly than the Consumer Price Index as a whole. Downs anticipates that this trend will continue for at least several years. Rising rents will hit poor families especially hard-and at a time when federal assistance to the poor has been scaled down-because home rent is their single biggest expense.

As rents continue to rise, in many localities political pressures for programs of rent control will rise also. But these pressures should be resisted, says Downs, because rent control "only increases the shortage of rental housing and the deterioration of the existing

rental inventory." He advocates instead a combination of initiatives: first, a federal prohibition of local rent controls; second, a federal housing allowance or voucher program for rental households with incomes less than half the median income in their localities; and, third, a modest reduction, which would finance the voucher program, in the tax benefits now accorded homeowners.