Effects of Source Magnification of Cognitive Effort on Attitudes: An Information-Processing View

Stephen G. Harkins
Northeastern University

Richard E. Petty
University of Missouri–Columbia

The effects that the number of sources presenting a persuasive message have on attitude change were examined in three experiments. In Experiment 1, subjects viewed a videotape of one or three speakers presenting one or three arguments in favor of a counterattitudinal position. Background information concerning the number of speakers and number of arguments supporting the position to which the subjects might be exposed was held constant. The three-source–three-argument message produced significantly more persuasion than any of the other conditions, which did not differ from each other. On the basis of this interaction pattern, it was suggested that each time a speaker appears, the recipient "gears up" to process the message and that if either speaker or argument is repeated, further thinking about the arguments is minimal. Experiment 2 excluded an alternative to this processing interpretation by showing that subjects exposed to the multiple-source–multiple-argument message did not infer that the pool of proposal arguments was larger than that inferred by other subjects. Finally, in a third study, subjects exposed to three compelling arguments purportedly produced by three different persons generated more positive thoughts and were more persuaded than subjects who read the same high quality arguments presumably generated by one person. However, subjects exposed to three weak arguments purportedly produced by three different persons generated more negative thoughts and were less persuaded than subjects who read the same low quality arguments attributed to one source. The three experiments together indicate that increasing the number of sources of a message increases thinking about the message content. This increased thinking can result in either increased or decreased persuasion, depending on the cogency of the message arguments.

Despite the many experimental investigations on attitude change that have been conducted over the past 60 years, relatively little attention has been paid to one of the more basic features of the persuasion setting: the number of speakers delivering the persuasive message. This lack of attention is all the more surprising given the number of settings in which people are faced with a communication from multiple sources. For example, at political rallies, numerous speakers rise to advocate each candidate. At political conventions, a prospective candidate is nominated by several noteworthy supporters. Television and magazine advertisements often expose people to multiple testimonials in favor of some product. In the courtroom, multiple witnesses present testimony relevant to the character of a defendant.

Perhaps the lack of interest in multiple sources stems from the feeling that previous research has already delineated the effects...
that this variable would be expected to have. First, it has been well documented that simply increasing the number of people who endorse a particular position enhances agreement with that position (cf. Asch, 1951; Krech, Crutchfield, & Ballachey, 1962; White, 1975). Second, multiple sources could generate different arguments to support their view, and increasing the number of arguments associated with a position enhances agreement with that position (Calder, Insko, & Yandell, 1974; Insko, Lind, & LaTour, 1976). Thus, exposure to multiple sources could be expected to lead to enhanced persuasion either as the result of the normative influence of the persons or the different arguments they might generate.

Interestingly, in previous research on this issue, actual exposure to persons or arguments was confounded with the mere knowledge of how many other persons or arguments also existed in support of the advocacy. In other words, subjects were exposed to the positions of one or multiple sources or to one or multiple arguments, but subjects in the one-person or one-argument conditions were not explicitly informed that multiple sources or multiple arguments also existed to which they could be exposed. Thus, it was not possible to determine whether this information alone would have been sufficient to lead to attitude change or if actual exposure to the multiple sources or arguments was required for increased agreement to occur. We were interested in determining whether actual exposure to the sources and to their arguments has persuasive impact over and above that resulting from the mere information about the number of persons and arguments to which one might be exposed. Three experiments were conducted to address this issue.

Experiment 1

In our initial, exploratory study, we had subjects view videotapes of one or three male speakers delivering one or three arguments in favor of instituting senior comprehensive exams at their university. Unlike previous researchers, however, we held background information about the number of persons and arguments to which they might be exposed constant by informing all of the subjects that three persons who were favorable toward the exams had each recorded three thoughts regarding the proposal. Consequently, even when a subject saw only one person give one favorable argument, she or he knew that there were other arguments and other speakers supporting the position to which she or he could have been exposed. Holding this background information constant ensures that any attitude change must be a consequence of the subject's actual exposure to the arguments and speakers rather than the result of simply knowing about the number of arguments and number of persons to which she or he could be exposed.

Method

Subjects

One hundred twenty undergraduates (67 males and 53 females) at Northeastern University took part in the experiment. The experimental cells formed a 2 (one person or three persons presenting arguments) X 2 (one argument or three arguments) factorial, with 20 subjects assigned to each condition. There were also two control groups (attitude control, information control) with 20 subjects in each. Ninety-six of the subjects (16 per cell) received $2 for their participation. The 24 remaining subjects (4 per cell) participated at a later time as part of an introductory psychology course requirement. All of the subjects were randomly assigned to one of the six conditions and were tested individually by a male experimenter.

Independent Variables

Subjects in the four experimental cells read the following instructions:

The Psychology Department at Northeastern is cooperating with the Faculty Committee on Academic Affairs in an attempt to measure student opinions concerning several proposals that are currently under consideration. One proposal that the Committee has discussed involves the introduction of senior comprehensives. If this plan were to be implemented, seniors prior to graduation would take a series of exams designed to demonstrate competency in both the general skills that any college graduate should possess and the specific skills required by the particular major. Failure to pass these tests would require remedial work before the degree is conferred.

As one means of measuring student opinion on this issue, the Faculty Committee asked us to have several students come in and give their views on videotape. We have so far videotaped three Northeastern students giving their views. Each of the students was asked to give three of his thoughts on the proposal. Each of the students, it turned out, favored the com-
prehensive exam idea. Today we would like to show you a short, randomly selected portion of the tapes we have made so far to obtain your reactions. So, we will ask you to please watch the randomly selected portion of tape and then to answer a few questions about it.

The students then saw a segment of videotape consisting of (a) one source giving one argument in favor of senior comprehensives; (b) one source giving three arguments; (c) three sources giving the same basic argument; or (d) three sources giving three different arguments (one each). The segments were made from a master tape consisting of three males each of whom gave three arguments in favor of senior comprehensives. The three basic arguments were: The quality of education would be improved, the prestige of the university would be enhanced, and graduates would be placed in better paying jobs. Although each speaker made each of the three arguments on the master tape, each speaker's version of the argument was somewhat different. For example, using the quality-of-education argument, Speaker A stated: "My brother went to NU and didn't really learn anything. If he had known all along that he would have to take a comprehensive exam, he would have tried harder as he went along and would have learned something." Speaker B's version of this argument was: "We have all heard about how students graduated from high school without really knowing how to read and write. Senior Comprehensives would make sure that students couldn't graduate from NU without the basic skills." The nine messages (the three arguments in their three versions) were pretested and found to be equally persuasive.

The experimental tape for a given subject was assembled by first randomly determining which of the four conditions would be run. If the one-speaker–one-argument condition was selected, both the speaker and argument were randomly chosen. If the one-speaker–three-argument condition was selected, both speaker and order of presentation of the arguments were randomly determined. If the three-speaker–one-argument condition was chosen, the argument and the order of the speakers were randomly selected. When the three-speaker–three-argument condition was selected, both the order of the speakers and the pairing between person and argument were randomly determined. Each subject saw a different segment constructed in this way. This randomization procedure, of course, ensures that each speaker, argument, and order of presentation was equally likely to be presented to each subject in the appropriate condition.

Randomly interspersed with these conditions, two control groups were tested. In the information control group, the subjects read the same instructions as the other subjects but were told that we would like to have them answer a few questions prior to viewing the videotape. They, in fact, never saw the tape, since we wanted to determine the effects of simply reading the instructions and knowing that three NU students who were in favor of senior comprehensives had each generated three arguments to which they might be exposed. In the attitude control group, the subjects simply read about the senior comprehensives proposal and were asked for their views on the topic. These subjects were unaware of the existence of the three students who generated three arguments.

Dependent Variables

Attitude measures. All of the subjects responded to two measures of attitude toward senior comprehensives. The first consisted of an 11-point scale on which subjects responded to the question: "To what extent do you agree with the Faculty Committee's proposal requiring Seniors to take a comprehensive exam before graduating?" (1 indicated "don't agree at all" and 11 indicated "agree completely"). The second consisted of the sum of four 9-point semantic differential scales (good/bad, beneficial/harmful, foolish/wise, and favorable/unfavorable) on which subjects rated the concept "Senior Comprehensive Exams." The responses to the two attitude measures were converted to standard scores and summed prior to analysis.

Cognitive response measures. Next, the subjects were informed that we were interested in their thoughts on senior comprehensives. They were given 2 1/2 min. to list their thoughts, after which they were instructed to go back and rate their thoughts with a + (a favorable reaction to senior comprehensives), a - (an unfavorable reaction to senior comprehensives), or a 0 (neutral or irrelevant to senior comprehensives). (See Petty & Cacioppo, 1977, for details.)

Recall measures. After completing the thought-listing measure, subjects in the experimental cells were given as much time as they wished to list all of the arguments from the videotape that they could remember. Two judges, blind to condition, scored the arguments recalled. An argument was counted as recalled if it summarized correctly one of the arguments the subject heard. Listings of the different versions of the same argument were scored as a single argument correctly recalled. The judges agreed in 94% of the cases (75 of 80). In those cases in which disagreement occurred, the inconsistency was resolved by a third judge.

Ancillary measures. The experimental subjects responded on 11-point scales to nine questions designed to assess their perceived involvement in the task and their perceptions of the source(s) of the message. Subjects in all six conditions were asked to indicate what percentage of the students at NU would favor senior comprehensive exams.

Results

Unless otherwise noted, the data for each dependent measure were analyzed, using $2 \times 2 \times 6$ analyses of variance (ANOVA) with sex of subject, motivation for participation (class requirement vs. $\$2$), and condition (four experimental plus two control conditions), as between-subjects factors. No reliable main effects or interactions were obtained for the motivation or sex factors on
any of the measures. Where significant effects for condition were obtained, multiple comparisons were carried out, using the Newman-Keuls procedure (Kirk, 1968, p. 91).

**Attitude Measure**

Analyses of the standardized attitude measure revealed a significant main effect for condition, $F(5, 96) = 15.4, p < .01$. The means for each cell are presented in Table 1. In each of the four experimental conditions and in the information control cell, subjects were informed that three of their fellow students who favored comprehensive exams had been videotaped giving three arguments concerning the exams and that they would be shown a randomly selected segment of this tape. That this background information alone had a significant impact on attitudes is demonstrated by the finding that subjects in the information control cell expressed more favorable attitudes toward the exams ($M = .12$) than subjects in the attitude-only control condition ($M = -2.38, p < .05$). The only difference between the four experimental conditions and the information control condition was that in the experimental cells, subjects actually saw and heard either one or three speakers deliver either one or three arguments. Although all of the experimental groups showed more favorable attitudes than those expressed by subjects in the attitude-only control condition ($M = .04$), the only one of the experimental combinations led to significantly more favorable attitudes toward senior comprehensive exams than those expressed by subjects in the information control cell: three speakers presenting three arguments. The enhanced persuasion elicited in this cell cannot be attributed to the information included in the arguments alone, to the number of speakers alone, or to the simple additive combination of these factors, since neither arguments nor speakers manipulated singly resulted in reliably more persuasion than a single speaker presenting a single argument ($ps > .20$). In combination, however, the source and argument variables enhanced agreement over that found in any other cell. The $2 \times 2$ (one or three arguments) \times 2 (one or three sources) interaction contrast suggested by this pattern of means was reliable, $F(1, 96) = 5.07, p < .05$.

**Table 1**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Attitude</th>
<th>Positive thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-person–three-argument</td>
<td>1.88b</td>
<td>3.75b</td>
</tr>
<tr>
<td>Three-person–one-argument</td>
<td>.30b</td>
<td>2.20b</td>
</tr>
<tr>
<td>One-person–three-argument</td>
<td>.04b</td>
<td>1.85b</td>
</tr>
<tr>
<td>One-person–one-argument</td>
<td>.03b</td>
<td>1.50b</td>
</tr>
<tr>
<td>Information control</td>
<td>.12b</td>
<td>1.95b</td>
</tr>
<tr>
<td>Attitude control</td>
<td>−2.38c</td>
<td>.70c</td>
</tr>
</tbody>
</table>

Note. Means that do not share a common subscript are significantly different ($p < .05$).

**Cognitive Response Measures**

The data for the positive thoughts measure followed the same pattern as that for the attitude measure, $F(5, 96) = 9.26, p < .004$. Subjects in the information control condition generated more favorable thoughts ($M = 1.95$) than attitude control subjects ($M = .70, p < .05$). Of the four experimental conditions, only subjects in the three-person–three-argument cell generated more favorable thoughts than information control subjects ($p < .05$).

Participants exposed to three sources presenting a single argument, or one source presenting three arguments, generated no more favorable thoughts than subjects exposed to a single source presenting a single argument ($ps > .20$). Each of these groups generated fewer favorable thoughts than the multiple-source–multiple-argument subjects ($ps < .05$). Again, the $2 \times 2$ interaction contrast suggested by this pattern of means was reliable, $F(1, 96) = 5.38, p < .05$.

Analysis of neutral, negative, and total number of thoughts revealed no reliable differences. Average within-cell correlations computed between the thoughts and attitude measures indicated that favorable thoughts were positively correlated with the attitude

---

1 Since no reliable differences were found for the sex variable, it was not used as a factor in the analyses of the subsequent experiments.
scores, $r(108) = .38, p < .01$; unfavorable thoughts were negatively correlated, $r(108) = -.63, p < .01$; and neutral thoughts were uncorrelated, $r(108) = .02, p > .20$.

**Recall Measure**

The recall data were analyzed in a $2 \times 2 \times 4$ (sex) X (motivation) X (experimental condition) ANOVA, since neither control group was presented with any arguments to recall. The proportion of arguments recalled correctly by subjects exposed to a single source presenting three arguments ($M = .72$) was not reliably different from the proportion recalled correctly by subjects exposed to the same three arguments presented by multiple sources ($M = .72, p > .20$). In addition, the recall of subjects exposed to multiple sources presenting a single argument ($M = .95$) was not reliably different from that of subjects exposed to a single source presenting a single argument ($M = .85, p > .20$). Of course, subjects exposed to three arguments recalled a smaller proportion of those arguments ($M = .72$) than subjects exposed to only a single argument ($M = .90, p < .05$).

**Ancillary Measures**

No reliable differences were obtained on any of the ancillary measures except the question concerning the number of other NU students that subjects thought supported the exam proposal. Subjects in the attitude control condition reported that a smaller percentage of fellow students would support the proposal ($M = 23\%$) than subjects in the other five conditions ($M = 53\%, p < .05$), among which there were no differences ($ps > .20$).

**Discussion**

Unlike what the accumulated research on conformity (White, 1975) and number of arguments (Calder et al., 1974; Insko et al., 1976) might have led us to expect, neither increasing the number of sources nor increasing the number of arguments alone led to increases in persuasion. However, as we noted previously, in the earlier research, subjects were not provided with background information about the number of persons and arguments that supported the advocated position to which they might be exposed. Had this been done, our results suggest that (at least with a relatively small number of persons and arguments) actual exposure to the sources and arguments would have led to no more persuasion than that resulting from exposure to the background information except when multiple arguments were presented by multiple sources. We now turn to a consideration of what might account for the enhanced persuasion resulting from actual exposure to multiple speakers presenting multiple arguments.

The pattern of data in Experiment 1 seems to rule out a number of potential explanations. For example, any explanation based on the number of sources or arguments alone, or the additive combination of these factors, cannot account for the enhanced persuasion, since neither exposure to multiple sources presenting a single argument nor exposure to a single source presenting multiple arguments led to any more persuasion than that achieved by a single source presenting a single argument. One might argue, however, that subjects seeing three different speakers presenting three different arguments inferred that the advocated position had greater support in the student population than did those subjects who were in the other conditions, and conformed to this view. However, the experimental groups and the information control group did not differ in their estimates of the percentage of students who would support the proposal, making this interpretation implausible. This finding also indicates that our design was effective in intentionally holding this information constant across conditions.

Though the number of potential supporters of the proposal was rated as constant across the conditions, perhaps differential attributions about the number of good arguments that supported the proposal could account for the multiple-speaker–multiple-arguments effect. That is, the knowledge that several sources each independently generated different, yet convincing, arguments may have led subjects to infer that there was a large pool of reasonable arguments in favor of the proposal. This inference may lead to
enhanced persuasion, since if a large number of reasonable proarguments exist, the proposal must be worth supporting. Because a single source is sampling without replacement from this pool of arguments, the fact that one source comes up with three different arguments would not suggest that the pool is large. Any one speaker would be motivated to avoid repeating himself, and his three arguments may have exhausted the pool. Certainly, seeing three people give the same argument would not provide any evidence that the pool was large. However, since the three people who generate three different arguments are sampling from the pool with replacement, the fact that they come up with different arguments may convince the subjects that a large pool of reasonable arguments exists. After all if the pool were very small, there would be some likelihood that an argument would be repeated.

A second plausible interpretation would contend that subjects in the three-person-three-argument condition engaged in greater cognitive elaboration (more thought) about the arguments presented and that this enhanced processing led to more polarized attitudes. This interpretation would go as follows: Each time a speaker appears, the subject "gears up" to process the message. If it is a new speaker and a new argument, the target attends to what is said and thinks about its implications. Since the arguments are sound, favorable thoughts and persuasion result. However, if the same speaker appears again, even though with new arguments, the target may put less effort into thinking about the message. After all, the target has heard this speaker already and feels that he knows what this source has to say. Likewise, if the target hears the same argument three times, even though with new people, the target may not spend much more time thinking about it. After all, he has heard the argument before. Consistent with this interpretation, we find that participants in the three-speaker-one-argument and one-speaker-three-argument conditions generated no more favorable thoughts than subjects who saw one speaker presenting one argument. Once either person or argument was repeated, further processing was minimal. Only when both speaker and argument changed were more favorable thoughts generated, leading to greater persuasion.

Of course it could be argued that it need not be differential processing that leads to these differences. Rather, it might be that the subjects in the other conditions do not pay attention once duplication of either speaker or argument occurs. Militating against this interpretation are the recall data. Subjects in the one-person-three-argument condition recalled as many of the arguments as did the subjects in the multiple-speaker-multiple-argument condition. These data, of course, are consistent with previous research demonstrating that a person's idiosyncratic cognitive responses to the content of a persuasive message are a more important determinant of attitude change than is message learning (Cacioppo & Petty, 1979; Greenwald, 1968; Insko et al., 1976; Petty & Cacioppo, 1979).

Experiment 2

In short, both the information-processing and the "pool of arguments" interpretation provide viable accounts for the results of Experiment 1. Our next experiment was designed to allow us to choose between these explanations. The pool interpretation suggests that subjects use the fact that the multiple speakers have generated convincing, nonoverlapping arguments to infer that there are a large number of good arguments in favor of the advocated position; thus, it must be a good idea. If this were the case, then subjects who saw multiple persons deliver multiple arguments but thought that these arguments exhausted the pool should be no more persuaded than subjects who saw one speaker deliver the arguments. The information-processing interpretation would lead us to expect that specifying the size of the argument pool would have no effect on persuasion, since enhanced processing in the three-speaker-three-argument case should

---

2 Research on message repetition suggests, however, that if the arguments were more complex than the simple one-sentence statements employed in the current study, then more favorable implications might have been generated with repetition, and increased persuasion could have resulted (cf. Cacioppo & Petty, 1979; Harrison, 1977; Sawyer, in press).
still occur, even if the arguments presented exhausted the argument pool.

Experiment 2 included three conditions: (a) one speaker presenting four arguments; (b) four speakers presenting four arguments, with the size of the argument pool specified as four arguments; and (c) four speakers presenting four arguments, with no mention of pool size, replicating the multispeaker, multiargument condition of the first study. In each of the three conditions, subjects were given the same information as to how many fellow students favored the advocated position, and all subjects actually heard the same four arguments.

Method

Subjects

The subjects were 30 undergraduates (12 males and 18 females) who received partial course credit for taking part in the research. The experiment comprised a one-way design with three conditions (one speaker–four arguments; four speakers–four arguments, limited pool; four speakers–four arguments, replication), with 10 subjects randomly assigned to each condition.

Independent Variables

On arrival, subjects were seated in front of a TV monitor. All of the subjects read the following instructions:

The Legislature of Massachusetts is considering a bill that would raise the driving age to 21. If this bill were passed, no one could receive a driver’s license until they reached their 21st birthday. Since this change would have its greatest impact on college-age young people, the Legislative Research Bureau was requested by the Legislative Committee on Highway Safety to obtain reactions to this proposal from students in area colleges. Here at Northeastern, the 100 students in the political science class, Policy-making in the State Legislature, 22.141, researched this issue as part of a class project.

As a means of getting student input on this issue, the LRB requested us to have all of the students from this class come in and give their views on videotape. We have now completed videotaping all of the 100 students giving their views. Each student was asked to give four of his thoughts on the proposal. It turned out that 91% of the students favored the proposal to increase the driving age.

The subjects in the one-speaker–four-argument condition read the following instructions:

Although we have tapes of the 100 students, now we would like to show you one of the student’s tapes which we have randomly selected from the 100 available. The student will present his four arguments in favor of raising the driving age. After you have seen the student present his four arguments, you will have heard one student randomly selected from the class. Afterwards we would like to get your reactions to these arguments.

The subjects in the four-speaker–four-argument replication condition read the following instructions:

Although we have tapes of the 100 students, now we would like to show you portions of four students’ tapes which we have randomly selected from the 100 available. Each student will present one of his arguments in favor of raising the driving age. After you have seen each student present one argument, you will have heard four randomly selected arguments from the class. Afterwards we would like to get your reactions to these arguments.

The subjects in the four-speaker–four-argument limited pool condition read the following instructions:

Although there were different wordings, when we boiled down all of the arguments generated by the 100 students in the political science class in favor of raising the driving age, we found that there were essentially four different favorable arguments. Today we would like to show you four students presenting these four arguments. Thus, you will be seeing four students with each student presenting one argument in favor of raising the driving age generated by the class. After you have seen each student present one argument, you will have heard all four of the favorable arguments that the class of 100 generated. Afterwards we would like to get your reactions to these arguments.

Depending on their condition, the subjects then saw a videotape of one or four males delivering four arguments in favor of raising the driving age. The segments were constructed from a master tape consisting of each of four persons delivering four arguments. The arguments were elaborations of the following four points: (a) Insurance rates would go down; (b) fewer traffic accidents would occur; (c) petroleum reserves would last longer; and (d) traffic flow would be facilitated and mass transit development encouraged. Each subject saw a different, randomly selected segment. In the one-speaker condition, one of the four possible speakers was randomly selected for each subject. In the multispeaker conditions, the pairing of speaker and argument was randomly determined. In all conditions, the order of argument presentation was randomly determined.

Dependent Variables

The subjects were asked to respond to the same set of dependent measures as in the first study. Thus, all of the subjects responded to two measures of attitude toward raising the driving age: an 11-point scale and four semantic differentials. As in Experiment 1, these measures were standardized and summed prior to analysis. The subjects provided thought listings and recalled as many of the arguments used as they could. The same scoring procedure used in Experiment 1 was used for
recall. The judges agreed in 97% of the cases (29 of 30), and the decision of a third judge was used to resolve the disagreement. In addition, the subjects responded to the same ancillary measures. There was one additional question. Subjects were asked to indicate how many good arguments in favor of raising the driving age they thought there were by circling one of a set of nine categories running from “0–1” to “16 or more.”

Recall Measure

Subjects recalled an equivalent proportion of the arguments in each of the cells, $F(2, 27) = .16, p > .20$. Overall, the subjects recalled an average of 3.2 (80%) of the four arguments to which they were exposed.

Number of Good Arguments

To test the hypothesis that subjects in the four-person–four-argument replication cell thought that there was a larger pool of convincing arguments than those in the one-person–four-argument condition, subjects indicated the number of good arguments they thought existed by circling one of nine categories running from “0–1” to “16 or more.” These data were first analyzed in a 2 x 2 contingency table, with experimental condition (one-person–four-argument vs. four-person–four-argument replication) and number of good arguments (five or fewer vs. six or more) as factors. Inconsistent with the argument pool interpretation, no reliable differences were obtained, $x^2(1) = .22, p > .20$. Forty percent of the subjects in the one-person–four-argument condition felt that five or fewer good arguments existed, as compared to 30% in the four-person–four-argument replication cell. As a test of our limited pool manipulation, we combined these two conditions and compared them with the limited pool condition. Eighty percent of the subjects in the limited pool condition indicated that five or fewer arguments existed, compared to only 35% of the subjects in the combined condition, $x^2(1) = 5.4, p < .03$. Thus, despite the fact that it apparently had no effect on persuasion, we were successful in convincing the majority of the subjects in the multiple-speaker–multiple-argument limited pool condition that five or fewer good arguments existed.

Ancillary Measures

No reliable effects were obtained on the ancillary measures. The subjects estimated

3 Five was used as the division point because four falls in the category 4-5 and we had attempted to convince the subjects in the limited pool condition that only four good arguments existed.
overall that 34% of their classmates would support the proposal to increase the driving age. It should be noted that this estimate was obtained despite the fact that all of the subjects had been told that 91% of the members of the class that looked into the issue supported the proposal. Of course, the general student population was not expected to have researched the issue, as had the members of the class. In any case, subjects' beliefs about the number of others who supported the proposal were apparently held constant across conditions.

Discussion

The data from Experiment 2 support the information-processing hypothesis over the argument pool interpretation. Subjects in each condition heard the same arguments; so exposure to the arguments alone cannot have accounted for the observed persuasion differences. Also, subjects in each condition believed that the same percentage of their fellow students endorsed the driving age proposal, so that differential conformity pressures cannot have accounted for the observed persuasion differences. Finally, the effect cannot be attributed to the fact that subjects hearing the four-speaker–four-argument tape inferred that the argument pool was larger than subjects hearing the one-speaker–four-argument tape because the effect emerged even when the argument pool was specified at four arguments. This pattern of data, combined with that of Experiment 1, is most consistent with the view that multiple sources presenting multiple arguments increase persuasion because changing speakers and arguments enhances cognitive elaboration of the message content.

Experiment 3

Having eliminated the pool of arguments interpretation, a third experiment was conducted to provide a more direct test of the information-processing view. Previous investigators testing a cognitive response approach to persuasion have varied the quality of the arguments contained in the message. In a prototypical study investigating the effects of distraction on information processing and persuasion, Petty, Wells, and Brock (1976) exposed subjects to arguments of either high or low quality at either high or low levels of distraction. Their hypothesis was that distraction would interfere with information-processing activity and disrupt the normal cognitive responses elicited by the message. Thus, a message that employed high quality persuasive arguments that would normally elicit primarily favorable thoughts would be less persuasive under distraction conditions because the distraction would disrupt the process of favorable thought generation. On the other hand, a message that employed arguments of low quality that would normally elicit primarily negative thoughts would be more persuasive under distraction conditions because the distraction would disrupt the process of counter-argument generation. As predicted, subjects under high distraction were less persuaded by arguments of high quality but more persuaded by arguments of low quality than subjects under low distraction conditions. In a similar vein, Petty, Harkins, and Williams (1980) manipulated argument quality and whether the responsibility for evaluating the persuasive message was thought to be shared with others or focused on a single subject. Subjects who shared the responsibility reported putting less cognitive effort into their evaluations. Consistent with an information-processing interpretation, these subjects also gave more favorable evaluations of a message consisting of low quality arguments and less favorable evaluations of a message consisting of high quality arguments than subjects who were solely responsible for the evaluation.

These studies examined the effects of reduced processing on attitude change. However, this paradigm can also be used to test the effects of enhanced processing on persuasion. For example, Petty and Cacioppo (1979) hypothesized and found evidence consistent with the notion that increasing the personal relevance of a message would enhance thinking about it and thereby increase responsiveness to a manipulation of message quality. This same reasoning can be applied in the present context. If subjects in the multiple-speaker–multiple-argument conditions are putting more cognitive effort into
their assessment of the merits of the arguments, we would expect enhanced persuasion only if the arguments to which the subjects were exposed were cogent. If the arguments were specious, the enhanced effort would lead to discovery of the flaws of the arguments, and the subjects should have even less favorable attitudes than subjects in the other conditions. The latter effect would be especially intriguing because it would provide an instance in which the more people who endorsed a particular position, the less influence would result.

**Method**

**Subjects**

The subjects were 100 students (53 males and 47 females) at Northeastern University who received partial course credit for taking part in the research. The design was a 2 (one person vs. three persons) X 2 (strong arguments vs. weak arguments), with 25 subjects randomly assigned to each condition. Thus, all subjects heard three arguments of either high or low quality that were attributed to either one or three persons. Subjects were tested in groups that ranged in size from two to five persons.

**Independent Variables**

On arrival, subjects read an instruction sheet that provided the same cover story used in Experiment 1, except that they were told that the students had written their views rather than having them videotaped.

Subjects were then asked to read the message that was provided in an envelope. Each argument in the message appeared on a separate sheet of paper. Before each argument there was a sheet attributing the argument to one of three male students. The first face sheet stated: "Here is an argument generated by (one of 3 names), who is a Junior." If the subject was in the one-person condition, the face sheet before the second and third arguments stated: "Here is another argument generated by (same name as before), who is a Junior." If the subject was in the three-person condition, the second and third face sheets read: "Here is another argument generated by (same name as before), who is a Junior." The subject was in the three-person condition, the second and third face sheets read: "Here is another argument generated by (same name as before), who is a Junior." If the subject was in the three-person condition, the second and third face sheets read: "Here is another argument generated by another student (different name in each case), who is a Junior." Which of the three students was named, with what arguments they were paired, and in what order they were presented was randomly determined for each subject. Three arguments were drawn from both the strong and the very weak editorials used previously in the Petty et al. (1980) research. The arguments dealt with employment opportunities, prestige of the school, and quality of the students. For example, the strong version of the prestige argument was:

> A study conducted by the Educational Testing Service revealed that most of the Ivy League schools and several of the Big Ten schools have senior comprehensive exams to maintain their academic excellence. Professors that were interviewed said that the exams assured that only high quality and knowledgeable students would be associated with Northeastern, increasing the prestige of both the alumni and the academic institution.

The weak version was:

> If Northeastern were to institute senior comprehensive exams it would be on the road to being internationally famous. Oxford and Cambridge Universities in England give comprehensive exams, and they have international fame. If we were to do the same thing, we would undoubtedly be identified with these great universities in the minds of people throughout the world. We may even get to be known as the American Oxford.

Subjects read either the three high quality arguments or the three low quality arguments.

**Dependent Measures**

The measures used were the same as those employed in the preceding study. Recall was scored as in the previous studies. The judges agreed in 100% of the cases.

**Results**

For each of the following dependent measures, planned orthogonal contrasts were made in the context of 2 X 2 analyses of variance, with number of persons (one vs. three) and quality of arguments (high vs. low), as between-subjects factors.

**Attitude Measures**

As predicted, subjects exposed to three persons presenting strong arguments were more persuaded (M = 1.08) than subjects exposed to exactly the same information presented by one person (M = .05), \( F(1, 96) = 4.16, p < .05 \). Also, consistent with our predictions, subjects exposed to three persons to whom three weak arguments were attributed were less persuaded (M = -1.24) than subjects who read the same poor arguments attributed to one person (M = .11), \( F(1, 96) = 6.86, p < .05 \). The Argument Quality X Number of Sources interaction implied by this pattern of means was significant, \( F(1, 96) = 11.1, p < .001 \).

**Cognitive Response Measures**

The results for the thought-generation measure followed the same pattern as that
for the attitude measure. Three-person subjects exposed to the strong arguments generated more favorable thoughts ($M = 3.64$) than one-person subjects ($M = 2.36$), $F(1, 96) = 6.83, p < .05$, and tended to generate fewer negative thoughts ($M = .6$) than one-person subjects ($M = 1.2$), $F(1, 96) = 2.77, p < .10$. On the other hand, three-person subjects exposed to the weak arguments generated more negative thoughts ($M = 2.04$) than one-person subjects ($M = 1.04$), $F(1, 96) = 7.69, p < .05$, and fewer favorable thoughts ($M = 1.6$) than one-person subjects ($M = 2.6$), $F(1, 96) = 4.17, p < .05$. Analysis of the neutral and total thoughts revealed no reliable differences. Average within-cell correlations computed between the thoughts measures and the attitude measure showed that the attitude measure was positively correlated with the number of favorable thoughts generated, $r(92) = .50, p < .01$; uncorrelated with neutral thoughts, $r(92) = -.02, p > .20$; and negatively correlated with unfavorable thoughts, $r(92) = -.50, p < .01$.

Recall Measure

Analysis of the recall measure revealed no reliable differences. Overall, subjects recalled an average of 2.02 (67%) of the three arguments presented.

Ancillary Measures

Subjects exposed to three writers who generated weak arguments felt that fewer of their NU classmates would support the proposal ($M = 34.4\%$) than one-person subjects ($M = 51.9\%$), $F(1, 96) = 6.26, p < .05$, but there were no differences for the subjects exposed to high quality arguments. Overall, the subjects estimated that 45.6% of their classmates would support the proposal.

The categories used to indicate the number of good arguments that subjects believed existed were analyzed in a $2 \times 4$ contingency table, with the number of good arguments (five or fewer vs. six or more) and experimental condition (multiple persons–high quality arguments, single person–high quality arguments, multiple persons–low quality arguments, single person–low quality arguments) as factors. This analysis revealed no significant differences, $\chi^2(3) = .51, p > .50$. Overall, 62% of the subjects indicated that five or fewer good arguments existed in support of the proposal.4

Discussion

Consistent with the information-processing interpretation, subjects exposed to strong arguments purportedly generated by three different persons generated more positive thoughts than subjects in the one-person condition; but in response to weak arguments, the three-person subjects generated more negative thoughts than subjects exposed to the same arguments supposedly generated by one person. As would be expected from these reactions, subjects reading high quality arguments from three sources were more persuaded than subjects receiving them from one source. On the other hand, subjects reading low quality arguments from three sources were less persuaded than subjects receiving them from one source. The information-processing explanation appears to be the only one that accounts parsimoniously for the results obtained in all three experiments. The different arguments presented by multiple sources are apparently processed more diligently than the same information provided by one person. This occurred both when the arguments were presented on videotape and when they were presented in a written communication. Furthermore, the enhanced processing elicited by multiple sources can lead to either enhanced or reduced persuasion, depending on the quality and cogency of the arguments offered.

General Discussion

The present research has implications for other attitudinal phenomena such as the group polarization effect (the finding that subjects' average attitude positions subsequent to group discussion tend to be more extreme in the same direction as the average

4 The 4–5 category was used as the division point, since it was the median category selected by the subjects. An analysis of variance performed on these data also revealed no reliable differences.
of the individual prediscussion attitude positions). Vinokur and Burnstein (1974) have provided an information-processing interpretation of the group polarization effect. According to their interpretation, when a subject is asked to make an initial attitude rating, the person reviews the arguments pro and con in his/her repertoire and, depending on the valence of the preponderance of arguments resulting from this review, indicates his/her position. After group discussion, the subject’s attitude position will shift to the extent that the arguments she or he hears are convincing and were not taken into account in his or her initial decision. Our research suggests that the amount of attitude change will depend not only on whether the arguments presented are novel and convincing but also on the number of the participants who present the arguments. To the extent that the arguments come from a limited number of sources, we would expect less persuasion to occur. In other words, our data indicate that six arguments from one person are not as persuasive as six arguments from six people, even when the subjects hearing the one speaker are aware that five other members of the group hold the same view.

Of course, future research will be directed at determining limiting conditions for the multiple source–multiple argument effect. For example, Wilder (1977) has shown that conformity was reduced by subjects’ perceptions that the sources of influence were not independent. This suggests that to the extent that the multiple speakers’ arguments are not seen as independently generated, their persuasive impact may be reduced. Thus, for example, if subjects were told that the arguments were generated by a committee, members of which would be presenting them, we might not expect to find the multiple-source–multiple-argument effect.

The present research, in conjunction with that of Petty et al. (1980), delineates the effects of two basic, yet largely ignored, features of the persuasion setting: the number of speakers delivering the persuasive message and the number of persons receiving the communication. The data from these studies are consistent with the notion that the same process mediates the effects of both number of sources and number of targets. These studies suggest that (a) the number of sources who provide arguments in support of an advocacy can have effects on persuasion over and above that which would be expected based on the research on conformity. This “extra” effect is due to the fact that the different arguments receive greater thought when they come from multiple sources rather than from a single source. (b) When subjects are the targets of a communication and are individually responsible for evaluating the message, they put more effort into processing the arguments than subjects who share the responsibility for the evaluation with the other members of their group; and (c) depending on the quality of the arguments in the message, modifications in the amount of cognitive effort expended can lead to enhanced or diminished persuasion. If the arguments in the message are sound, then increasing the effort expended leads to the discovery of the merits of the arguments and enhanced persuasion; if the arguments are unconvincing, increasing the effort expended leads to the discovery of the message flaws and diminished persuasion. These findings suggest that the number of sources and the number of targets of persuasive messages, relatively ignored variables up to this point, can play an important role in persuasion and that this role is mediated by the amount of effort the targets devote to cognitively elaborating the content of the message.

References


Received August 6, 1979
Revision received July 10, 1980