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AN ANALYSIS OF HOW PEOPLE USE GROUPS AS A SOURCE OF INFORMATION ON WHICH TO BASE JUDGMENTS

by

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Introduction

Modern man to gain knowledge about the world in which he lives can no longer trust himself to be an expert in all things and make decisions based on knowledge obtained through his own direct experience. He finds his own experience to be much too limited and must more and more use others as a source of information. Thus, he reads what reporters and editorial writers have written in newspapers; he listens to what commentators and entertainers have to say on radio and television; and most of all, he discusses with and listens to what his family, friends, and people with whom he works have to say about every facet of life. Because of this great diversity in sources, he often receives conflicting information and many different views and opinions.

The problem of how man uses others as a source of information and how he resolves conflicts in this information should be examined more closely. The problem is a central one in understanding behavior and yet it has not been directly studied.

Overview of Thesis

This thesis studies the manner in which people form judgements based on information provided by a group. Its overall conception is rooted in the social-psychological literature on the effects of group pressure and conformity stemming from the work of Solomon E. Asch.

The thesis, however, makes two points of departure from the Asch group-pressure experiment. (1) In Asch's experiment, the naive subject and the group members had equal access to the physical reality (stimulus cards) about which the group and subject were asked to make a judgment. In real life, however, we often use group information and make judgments about things we have never personally experienced. In the present study, subjects will be asked to make a judgment about an event which they have never known first hand, but which they know about only through reports of a group. The main justification for this approach is that this is as common a mode of using group information as that provided in Asch's study, in which both group and naive subject had equal access to the reality in question.

(2) The second point of departure is that this thesis studies the effects of schisms in the group in a parametrically systematic fashion; not only are its effects on judgment studied, but also on confidence in one's judgment.

Historical Background

Social influence processes

Research in the area of conformity appears to be most closely related to the problem under investigation in this study. Conformity itself has long been a central concern in the study of social behavior. It has been used as a label given by an observer to the end product of behavior and traditionally refers to the situation in which an individual's attitudes or behavior are more similar to those of a group than it was at some previous point in time.

It can be readily understood why conformity has acquired a negative connotation. For many people the term implies a slavish submission to others or a cowardly yielding of one's beliefs. Consistent with such an interpretation, most psychological experiments in this area have been designed in such a manner that conformity was by necessity maladaptive in that it lead to a factually incorrect response. However, such a view of conformity is oversimplified because of the great diversity of phenomena included in what is classified as conformity.

The multivariate nature of conformity has been recognized by many investigators in the area. Asch (1961) has commented on the heterogeneity involved in what we commonly call conformity:

> It should be plain that the responsiveness to social influence that we call conformity is not a psychological category but an external classification, which may include quite heterogeneous phenomena. One can reach agreement with others on the basis of independent judgment. One may delegate responsibility to those whose expertness and intentions one trusts. When uncertain, one may quite deliberately decide to give the benefit of the doubt to

> the urgings or advice of others. There is also a more immediate persuasiveness that persons and groups exert; this has been the main concern of students, although its conditions have hardly been formulated. (Asch, 1961, p. 154)

Asch astutely points out that social influence can serve many functions for the individual, but the immediate so-called 'non-rational' persuasiveness has been the main target of investigation. Thus, the negative aspects of conformity have generally been stressed.

Sherif (1936), on the other hand, has stressed the positive and critical role of social influence in norm formation which is the very essence of social and moral living. Campbell (1961) has similarly discussed the rational aspect of conformity: "for social beings, learning by direct experience is only one of several ways of acquiring behavioral dispositions" (p. 103) and "In many instances, so-called conformity behavior is an intelligent part of a rational search for valid knowledge about a fallibly and indirectly known world rather than an interest in being like other persons whether or not they are correct," (p. 108).

Festinger (1965), in his interest in opinion influence processes in social groups, has developed a theory of social comparison processes. In his second hypothesis, he also discusses the role of others in verifying opinions we hold; he states that: "to the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinion and abilities of others." (p. 148)

Deutsch and Gerard (1955) have differentiated between two types of social influence which they refer to as normative and informational;

informational social influence consists of influence to accept information obtained from another as evidence about reality.

Rokeach (1960), in his study of attitudes and belief systems, has also emphasized the dependence of social life upon one's willingness to make use of knowledge provided by others. His very definition of authority includes any source to which we look for information or to which we turn to verify information already possessed about any aspect of the universe.

Katz (1966), in his review of the two-step flow of communication hypothesis, has stated that its main emphasis is on interpersonal relations as channels of communication. The hypothesis proposes that influences stemming from the mass media first reach "opinion leaders" who, in turn, pass on what they read and hear to those of their everyday associates for whom they are influential.

Thus, investigators in the areas of conformity, attitudes, and mass communications have pointed out that others can function for the individual as intelligent and rational sources of information. If an individual's direct access to information is cut off or never really existed in the first place as in many 'real life' situations, then, as is the case in the present study, other people may be the only information source available.

Group size and conformity in unanimous groups

A few studies have examined the effect on conformity of the size of the group opposing a person. Asch (1965) varied the size of the unanimous majority and studied groups consisting of 1, 2, 3, 4, 6, and

15 opponents. Conformity increased markedly from 1 to 3 opponents, and then evidently reached a plateau at this size, although the relation was slightly curvilinear. Rosenberg's (1961) study provides evidence that the apparent curvilinearity found by Asch was not just a leveling-off effect; greatest conformity occurred with three partners present and the decrease from three to four partners was statistically significant.

Two studies have failed to find a significant relation between group size and conformity. The results of Kidd (1958) and Goldberg (1954) were in the hypothesized direction but were statistically nonsignificant. In both these studies, group pressure was presented by the experimenter's report of the group's judgment and the judgmental stimulus was ambiguous. According to Conolley (unpublished masters thesis cited in Gerard, Wilhelmy and Conolley, 1968) disagreement with only one other person produces considerable yielding when the judgmental stimulus is ambiguous; under such conditions, adding disagreeing persons may have little or no additional effect. However, Gerard, Wilhelmy, and Conolley (1968) used the same unambiguous task as Asch (judging the length of lines) and yet their data indicate a linear trend and not the curvilinearity found by Asch (1956) and Rosenberg (1961).

Kashida (in Thomas and Fink, 1963) found a significant size effect using groups of 5, 10, and 30 Japanese university students. Although there was a shift toward conformity in all groups, magnitude of opinion change showed a curvilinear relationship to group size,

being greatest in 10-person groups and least in 5-person groups.

On the basis of some of these studies, Thomas and Fink (1963) conclude that the magnitude of the group's influence on the individual is a function of group size under some conditions, but differences in task and procedure preclude specification of the relevant conditions.

A second set of findings involve measurement of the individual's opinion before and after group discussion of a problem. Half of Kashida's (in Thomas and Fink, 1963) groups discussed the opinion items and arrived at a group decision while the other half were feedback majority opinions. Analysis indicated that the shift toward the group opinion bore the same curvilinear relationship to group size under discussion as under majority feedback conditions. A negative effect of group size was found by Hare (1952) with groups of 5 and 12 Boy Scouts, with two measures that consensus increased more in the smaller groups. These findings lend further support to the conclusion that group size is an important factor in determining the amount of yielding to conformity pressures.

Conformity in nonunanimous groups

One of the distinctive characteristics of the Asch procedure is that a single individual is opposed by a unanimous majority. However, in Asch's (1952, 1955) studies, experiments were conducted to determine the effect on conformity of a nonunanimous group. When a confederate gave the correct answer throughout, thereby serving as a partner for the subject, conformity decreased drastically (from about 35 to about 5 percent). In another variation, a unanimous majority gave correct

answers in the early trials. The interesting finding was that the naive subject was independent as long as anyone agreed with him; once he was alone, however, conformity to the majority increased abruptly.

There seems to be at least two reasons why social support tends to decrease conformity. According to Allen's (1965) first explanation, the partner's opinion could provide information about reality, thereby reinforcing the person's confidence in the veridicality of his own perception. Allen's second explanation states that the effect could be due to the partner's dissent from the views expressed by the other group members; it may be much easier to disagree if someone else takes the initiative in this opposition. Asch (1955) arranged two conditions which furnish data relevant to these hypotheses. In one condition the partner chose an incorrect alternative midway between the group's extreme error and the correct response. Conformity decreased by about one-third, and most of the errors were moderate ones which, incidentally, were the kind made by the partner. In another condition, the dissenter chose the extreme alternative, in disagreement with the group's moderate error. In this case errors dropped to only nine percent. From these results, Allen interprets the effect of a partner as being not primarily informational, but perhaps creating the perception of greater tolerance for dissent which frees the naive subject from the influence of the group majority to a remarkable degree. Whether this is the simplest and most emcompassing and accurate explanation of these data is debatable. Actually, Allen appears to be suggesting in the first explanation that certain kinds of information provide confidence which influences judgment; this appears to be a

better explanation of Asch's data and therefore this study includes the measurement of confidence directly.

In another experiment of Asch's (1955), a confederate answered correctly on six trials, then always agreed with the majority. Later, when the partner "left" the subject and no longer sided with him, there was a sudden increase in conformity. Asch concluded that this was due to the person's feeling that the partner had "deserted" him, and not just to the lack of a partner. To test this idea, the instructed partner merely left the room after six trials. Although conformity increased when the partner left the room, conformity was less than when the partner "deserted". This feeling of "desertion" might very well directly influence the subject's confidence in his ability to make a judgment.

Statement of thesis on group size

While there has been some exploration of the effect of the number of members in a unanimous group, there has been none as yet of the effect of the number of members in a nonunanimous group. In all the previously cited research social support consisted of only one member agreeing with the subject. The previously cited research demonstrates that group size is a critical variable in changing opinions and attitudes to accord with the unanimous group. However, what will happen if the group is no longer unanimous in their decision: that is, what will happen if the group is split into two divisions with opposing decisions. The number of members in each group division as well as the number of members in the total group should logically be

critical variables. This is one of the main problems investigated in this study.

Since one of the major aims of this research is to study the effect of the number of members in split groups, the critical numbers found in previous research is used in forming subgroupings. The group disseminating the information is split into two subgroups diametrically opposed to one another in their end judgments. Because Asch (1956) found that conformity reaches a plateau with a group of three and Rosenberg (1961) found a decline with a group size of four, four was the initial starting point in setting up groups. In order to have two subgroups of four members each, the total group must consist of eight members. Since the total group size of eight is kept constant, the experiment on group schisms consists of every possible combination of two subgroupings which when added together total eight; thus, there are four conditions (4 vs 4, 5 vs 3, 6 vs 2, and 7 vs 1).

The relationship of judgment and confidence

Allen (1965), as previously stated, gave as one reason why social support tends to decrease conformity the speculation that the partner's opinion could provide information about reality, thereby reinforcing the person's confidence in the veridicality of his own judgment. In this study, confidence of the subject in his judgment is directly measured.

Several investigators have obtained an interesting correlation between certainty and yielding (Crutchfield in Krech et. al., 1962;

Hochbaum, 1954). After persons changed their opinion to agreement with the group, they also expressed high confidence in the correctness of the new response. This raises the question of the direction of the relationship between confidence and judgment; does one's confidence in one's ability to make a judgment on the basis of the information available influence one's judgment or vice versa?

Certainty of judgment was studied experimentally by Kelley and Lamb (1957). Subjects rated the taste of a substance (pheylthourea) that is bitter to some people and tasteless to others. Groups were composed of two tasters and one nontaster or two nontasters and one taster. The taster majority affected the nontaster, but the nontaster majority did not influence the taster. Certainty of the subjects' ratings of unpleasantness can account for the results; ratings of tasters indicated more certainty than ratings of nontasters, and this suggests that confidence in one's ability to make a judgment influences that judgment.

Brim and Hoff (1957) have found rating scale judgment and certainty to be highly correlated. They view extremity of response as an effort on the part of an individual to achieve a greater degree of structure and ordering of his world. They assume that a strong desire for certainty is expressed in two ways: (1) a tendency to set the probability values on an attitude scale near one of the two extremes; and (2) a tendency to claim a high degree of certainty. However, this strong relationship which they found can possibly be partially explained as an artifact of the measurement procedure which they used.

Extremity of response and confidence were both measured by a traditional interval scale. This suggests that confidence should not be measured with an interval rating scale if judgment is to be so measured.

A clarification of the use of the term 'information'

The term information has recently become a rather popular term in psychology. It should be clear that while many different kinds of information exist, the information that is being manipulated in this study is not the member's representation of physical reality, but positional information; only the number of people who come to a positive or negative judgment is varied in this study.

Statement of the Problem

A group can function as an information source; in fact, it may be the only available information source about an event, as it is in this study.

In the first experiment, the consensus experiment, the size of a unanimous group is varied and its effect on judgment and confidence is investigated.

Hypothesis 1 - The larger the size of a group who unanimously take a particular position, the greater will be the influence on the subject's judgment.

Hypothesis 2 - The larger the size of a group who unanimously take a particular position, the more confident the subject will be in his judgment.

In the second experiment, the schism experiment, the total group size of eight is kept constant but the sizes of the schisms in the groups are varied. The direction, extremity of judgment, and confidence in the judgment can be considered a function of ratio of agreement, that is, the ratio of the number of group members backing a particular position to the total size of the group.

Hypothesis 3 - The larger the ratio of agreement, the larger will be the influence on the subject's judgment.

Hypothesis 4 - The larger the ratio of agreement, the more confident the subject will be in his judgment.

Method

Overview of design

This study consists of two separate experiments. The consensus experiment is most closely related to Asch's (1955) research in which the size of a unanimous majority was varied; groups consisting of 2, 3, 4, 6, and 8 members are studied. However, unlike the Asch paradigm, there is no direct source of information available; all information is communicated through the group members. This is an attempt to represent the many situations in life in which an individual does not directly experience an event but draws opinion and bases his behavior on information he obtains from friends, neighbors, radio, television, etc.

In the schism experiment, the one experimental variable directly manipulated is the size of the split of opinion in group discussions of an event. The resulting four experimental conditions are 4 vs 4, 5 vs 3, 6 vs 2, and 7 vs 1 splits in group judgments of the event.

The unknown event in both experiments is a play; the group discussions are taped and the main dependent measures are judgment and confidence in the judgment.

Subjects

One hundred and fifty subjects participated in the consensus experiment and one hundred and twenty subjects participated in the schism experiment. The subjects were drawn from the undergraduate student body enrolled in a Summer Session of the City University of

New York. A subject was only allowed to participate in one of the two experiments.

Apparatus

The group discussions of the play were taped and the number of group members who gave a final favorable or unfavorable judgment of the play was varied. Only the end of each tape recording was played to the subjects; it included a very brief statement by every group member on whether or not he like the play and whether or not he would recommend the play to others. This was followed by the moderator summarizing the group's opinion by stating the exact number of favorable reports with positive recommendations and the exact number of nonfavorable reports with negative recommendations. There were a total of 18 different tape recordings used in the two experiments. The same group of eight males were involved in making all the tape recordings; these males were college students coming from the same population as did the subjects for this study. The order in which the positive and negative judgments were presented on each tape-recorded discussion was randomized between conditions. The order was also randomized within conditions; that is, there were two different orders of presentation of arguments for each condition. This was done so that all factors other than the particular number of group members coming to a particular position would contribute to the within-group error variance and not to the treatment variance. Tables 1 and 2 summarize the experimental conditions and the number of subjects exposed to each condition. The order of presentation of the arguments in the group discussions is summarized in

the Appendix p. 51.

Eight point interval scales were used to ascertain judgment of the play. The subjects were asked to rate both how good they think the play is and also how interested they are in seeing the play (see Questionnaire in Appendix p. 47).

Confidence was measured by asking the subject to choose among five alternative statements describing degrees of confidence in his judgment (see Questionnaire in Appendix p. 48).

Procedure

Each subject participating in either part of the study was randomly assigned to one experimental condition. To each participating subject the following statement was read by the experimenter:

> People make investments in their entertainment; that is, they buy tickets to see particular plays and movies without really knowing too much about them except that they do talk to people who have already seen the play or movie or perhaps they read reviews. This relatively unresearched problem of how people make these kinds of decisions is the one being studied here.
>
> You will now be asked to listen to a tape recording rather carefully. This tape is of a group of ____ people who have just seen a play and they are discussing it. This tape recording was made confidentially and these people do not want their identities divulged nor do we want to identify the particular play they are discussing, so no names will be used. I will now turn on the tape recording towards the end of the discussion. There are ____ people participating in the discussion and I am acting as moderator. Please listen carefully.

After each subject had been exposed to one of the 18 different taped discussions, he was given a questionnaire and told to write his group number in the appropriate space.

For part I of the questionnaire, the subject indicated his opinion of the unknown play on an eight-point rating scale. The

instructions were as follows: "Please indicate on the basis of what you have just heard how interested you are in seeing this play by placing a check in the most appropriate interval."

Part III provided a measure of confidence. The subject chose among five alternative statements describing degrees of confidence in his judgment. The instructions were as follows: "You have made a rating on the preceding page concerning how good you think the play is. We are interested in knowing how confident you feel about this judgment. Please check the alternative closest to how certain you feel about this rating." The statements were:

(a) I feel extremely confident of the judgment I made.

(b) I feel moderately confident of the judgment I made.

(c) I feel slightly confident of the judgment I made.

(d) I do not feel confident of the judgment I made.

(e) I am extremely unsure of the judgment I made.

Normative data were collected prior to the study on these statements (see Appendix, pp. 49-50). 101 students in the Freshman Program of the City University of New York were asked to rate each of the above five statements on the degree of certainty implied using an eight-interval rating scale. Median ratings were calculated for each statement and those were used to score this part so that to each subject in the study proper a numerical score for confidence was assigned.

After having completed the questionnaire, the subject was asked the following questions:

(1) How many people participated in the taped group discussion?

(2) What was their final judgment of the play?

(3) What did you think this experiement was all about?

(4) Did this influence your behavior during the study in any particular manner?

Following this final interview, the purposes of the study were explained to the subjects, their secrecy was requested, and they were thanked for their participation.

Results

The first question is whether judgment and confidence increase as size of a unanimous group information source increases. Analyses of variance were performed and no relationships found between size of a unanimous information source and either judgment[1] or confidence; thus, hypotheses 1 and 2 were rejected.[2] Means and standard deviations under each group size are reported in Table 3 for judgment scores and Table 4 for the confidence measure. The means do not differ significantly from one another.

The second question is whether judgment and confidence increase as the ratio of agreement increases. Significant relationships were found between size of schisms in the information source and both judgment and confidence. Information concentration has been previously defined in the present study as the ratio of the number of group members backing a particular position to the total size of the group. Means and standard deviations for judgment scores are reported in Table 5. These data generally support hypothesis 3 which states that the larger the ratio of agreement the larger will be the influence on the subject's judgment. Means and standard deviations for confidence scores are reported in Table 6. These data generally support hypo-

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[1]Judgment scores are reported as positive when they are in the same direction as the opinion expressed by the majority of group members in the information source and are reported as negative when they are in the opposite direction.

Confidence scores are directly reported as checked on the rating scales.

[2]An alpha level of .05 was used for all significance testing.

thesis 4 which states that the larger the ratio of agreement the more confident the subject will be in his judgment.

This relationship of information concentration to both judgment and confidence can more easily be seen in Figure 1 which graphically show mean judgment and confidence scores for each ratio of information concentration. These two graphs appear to be linear and a further analysis reveals that the linearity is statistically significant as can be seen from Table 7 for judgment scores, and from Table 8 for the confidence measure.

Over-all analyses of variance across all nine experimental conditions of unanimous and split group information were performed on the judgment and confidence scores and are reported respectively in Tables 9 and 10. Both obtained F ratios are significant at the .05 level. Post hoc comparisons were made and will be discussed further on in the paper.

Discussion

What are the implications of the significant relationships found in this study between size of schisms in the information source and both judgment and confidence? Since the supported hypotheses have been formulated on the basis of the concept herein called ratio of agreement, this concept appears to be useful in generating hypotheses and explaining findings. Simply put, the major finding of this study is that judgment and confidence are linearly related to ratio of agreement. This concept of the ratio of agreement is based on the view that a group of people can function as a source of information for others and that this information processing is different from the phenomenon of conformity. However, it must be admitted that the concept is not necessarily required to predict or explain these findings; a conformity model could have been used for this same function. To understand the usefulness of this concept the first question asked on the relation of judgment and confidence to size of a unanimous information source must be reexamined.

It was hypothesized for the consensus experiment that judgment and confidence would be affected by group size; however, no such effect was found (see Tables 3 and 4). These hypotheses were directly based on the literature on conformity which reports that size of the group has a significant effect on conformity; Asch (1956), Rosenberg (1961), and Kashida (in Thomas and Fink, 1963) all found that conformity showed a curvilinear relationship to group size, while the data of Gerard, Wilhelmy and Conolley (1968) indicated a linear trend. However, if

these hypotheses would not have been formulated on the basis of the previous findings in the area of social influence, but if instead the concept of ratio of agreement were used to generate hypotheses, then no effect of size of group on judgment nor confidence would have been predicted. Since all the taped groups in the consensus experiment were unanimous in their decisions, their agreement ratios would always have been the same number in the numerator as in the denominator; that is, their agreement ratios would always equal "one". Thus, on the basis of the notion of ratio of agreement no effect of group size on the dependent variables of judgment or confidence is predicted.

The findings of these two experiments seem to indicate that the notion of ratio of agreement offers a better explanation of these results than does conformity; also the notion appears to be a useful one in generating hypotheses. The paradigm used in this study has a major departure from the traditional Asch conformity paradigm and perhaps this is why a new concept such as ratio of agreement had to be developed to predict and explain the results.

This study makes one point of departure from the Asch group-pressure experiment and this one departure is critical. In the traditional experimental design, both the naive subject and the group members had equal access to the physical reality about which they were asked to make a judgment. However, in the present study, the subjects were asked to make a judgment about an event which they had never known first-hand, but which they knew about only through reports of a group.

This departure in design appears to be criticial in accounting for the differences in results as reported in the literature and as found in this study. It appears that group pressure is one phenomenon; yet realistically both are ways in which groups function in order to influence others. Thus, it appears that social influence can be separated into at least two component parts; the group as a pressure source leading to conformity and the group as an information source leading to information processing. This distinction appears to be similar to the one drawn by Deutch and Gerard (1955) between normative and informational social influence. The process studied in this thesis seems to correspond to informational social influence, which they define as the acceptance of information obtained from another as evidence about reality.

Allen (1965), as previously discussed, speculated on the possible reasons why social support tends to decrease conformity. One possibility he states is that the effect could be due to the partners' dissent from the views expressed by other group members; he feels that it may be much easier to disagree if someone else takes the initiative in this opposition. This explanation seems to suggest that size of the disagreement is unimportant; it further suggests that a dichotomy exists between a group which is unanimous and one which is in disagreement and that these two conditions alone may determine amount of conformity. However, this was not the case as found in the present study. Both judgment (which is analogous to the traditional conformity measure) and confidence were found to be linearly related to size of

the splits in the group information.

Allen suggests another possible explanation which he then rejects. It is that the partner's opinion could provide information about reality, thereby reinforcing the person's confidence in the veridicality of his own perception. With some alteration, this explanation seems to fit the results of this study. It appears that the effects of the schisms in the group were primarily informational. That is, the larger the split in the group, the less confident the subject was in his ability to make a judgment with the information at hand and the less the judgment was influenced by the majority of the group. This conclusion that the effect of the schisms is primarily informational is limited to explaining the results obtained in this study and must not be generalized to data generated by the traditional conformity paradigm.

Since significant F ratios were found on both the judgment and the confidence measures (see Tables 9 and 10), it was decided that further analyses would be carried out in order to discover what was contributing to the over-all significance. Post hoc comparisons were made on the judgment and confidence measures using the Scheffe method of multiple comparisons among means. At the pre-chosen .05 alpha level a "t" of 3.9 or larger is needed for significance. For the judgment measure, the unanimous conditions were significantly different from the schism conditions ($t = 6.4$), while this comparison did not quite reach significance on the confidence measure ($t = 3.8$). Since all the unanimous groups have agreement ratios of one, and split groups have

ratios of less than one, this difference between unanimous and split conditions fits into the ratio of agreement explanation. It was also found that the unanimous 8 and the 7 vs 1 split conditions produced significant differences on the judgment measure from the conditions with greater disagreement (the 6 vs 2, the 5 vs 3, and the 4 vs 4 split conditions). Thus, in addition to the fact that judgment and confidence were linearly related to size of split, judgment scores were found to be significantly different in the experimental conditions with greater agreement from others with greater disagreement and these differences fitted the ratio of agreement explanation.

From the negative findings on the effect of size of unanimous information source, a question can be raised about whether the subjects were truly aware of the group size and judgments expressed. In order to examine the effectiveness of the experimental manipulation after completing the questionnaire, each subject was asked to report on what he had heard; that is, on the number of people who had participated in the group discussion and their final judgments. Any subject who did not report the exact number of people who had participated in the taped discussion he heard or the exact number of people who came to each final judgment was counted as an error. Subjects exposed to group sizes of 2 and 3 produced two errors in each condition while those who heard groups of 4, 6, or 8 members produced from 11 to 13 errors. However, no corresponding pattern of differences were found on either the judgment or confidence measure between conditions of groups of unanimous sizes of 2 and 3 participants from the larger unanimous groups.

Thus, these errors in reporting the size and judgments of the information source cannot be said to be responsible for the negative findings on size on the judgment and confidence measures.

While there were 10 errors in the 7 vs 1 split condition and nine in the 6 vs 2 split condition, there were 18 and 17 errors respectively in the 5 vs 3 and 4 vs 4 split conditions. However, the increase in errors in the 5 vs 3 and 4 vs 4 split conditions was due to the subject's inexact reporting of final judgments (they reported that the group was split or mixed without reporting the exact numbers involved). Thus, while the size of a unanimous group increases or while the size of schisms in the group increases, there does exist a corresponding increase in errors the subjects make in reporting what exactly is going on; however, this factor of number of errors in reporting group size and judgments does not appear to explain the particular pattern of results obtained on the dependent judgment and confidence measures.

Data on a third measure were collected in this study; rating scale responses on interest in seeing the play that the subjects heard discussed. The results of the analysis on this measure were not included in the results section since it paralleled the results on the other two major measures and did not add anything further to the conclusions which could be drawn from the other measures. This measure was included in the study because it was thought to be an approach to a behavioral commitment on a judgment made and thus probably an additional, qualitatively different measure of confidence. The results of

the analysis on this measure parallel the findings on both the judgment and the confidence measures; specifically, interest in seeing the play was linearly related to size of schisms in the group, the larger the schisms, the less interest there was in seeing the play. Also no relationship was found between size of a unanimous information source and this measure. A statistical summary of these results is included in the Appendix (p. 46).

The negative as well as positive findings of this study suggest that further research utilizing the concept of ratio of agreement and thus viewing the group as an information source might be fruitful. Only two randomized orders of presentation of positive and negative judgments were used within each condition of the schism experiment. Additional orders should be utilized in future research or perhaps, the effect of order should be independently studied. Also the effect of subject variable such as sex and communicator variables such as status could be studied. It is hoped that future research will lead to greater understanding and ability to quantify the information dimension.

Summary Statement

In conclusion, it appears that asking subjects to make judgments about an event which they do not know first-hand but which they know about only through reports of a group, is a significant enough departure from the traditional Asch group-pressure experiment to be producing a different phenomenon, possibly similar to that of informa-

tional social influence developed by Deutsch and Gerard. The process has been called "information processing" and the concept of ratio of agreement was used to predict and explain the results. Ratio of agreement was defined as ratio of the number of group members who back a particular position to the total size of the group. In the consensus experiment in which the size of a unanimous group was varied, it was expected on the basis of a conformity model that judgment and confidence would increase as the size of the unanimous information source increased. Yet, on the basis of the concept of ratio of agreement no effect of size of group was expected since all the ratios equal one. This second notion of ratio of agreement was supported since no effect of size of group was found. In the schism experiment, in which the size of splits in the group information was varied, it was found that the ratio of agreement was linearly related to both judgment and confidence.

TABLE 1

Summary of the Experimental Conditions and the Number of Subjects Included in Each Condition of the Consensus Experiment

Condition		Number of taped positive judgments	Number of taped negative judgments	Number of Ss exposed
1	A	2	0	15
	B	0	2	15
2	A	3	0	15
	B	0	3	15
3	A	4	0	15
	B	0	4	15
4	A	6	0	15
	B	0	6	15
5	A	8	0	15
	B	0	8	15
				150

TABLE 2

Summary of the Experimental Conditions and the Number of Subjects Included in Each Condition of the Schism Experiment

Condition	Number of taped positive judgments	Number of taped negative judgments	Number of Ss exposed
6 A	7	1	15
B	1	7	15
7 A	6	2	15
B	2	6	15
8 A	5	3	15
B	3	5	15
9 A	4	4	15
B	4	4	15
			120

TABLE 3

Judgment Score Means and Standard Deviations Under Each Unanimous Group Size

N=150 (n=30)

Group size	Mean	Standard deviation
2	2.47	1.46
3	2.77	1.19
4	3.00	1.05
6	2.57	1.77
8	2.23	1.59

TABLE 4

Confidence Score Means and Standard Deviations Under Each Unanimous Group Size

N=150 (n=30)

Group Size	Mean	Standard deviation
2	1.00	2.57
3	1.37	2.09
4	1.43	1.94
6	1.23	2.31
8	0.90	2.79

TABLE 5

Judgment Score Means and Standard Deviations Under Each Ratio of Agreement

N=150 (n=30)

Ratio of agreement	Mean	Standard deviation
8/8[1]	2.23	1.59
7/8	2.17	2.07
6/8	0.50	2.11
5/8	1.17	1.64
4/8	0.60	2.04

[1]The data for the 8/8 groups are also reported for the analyses of the consensus experiment.

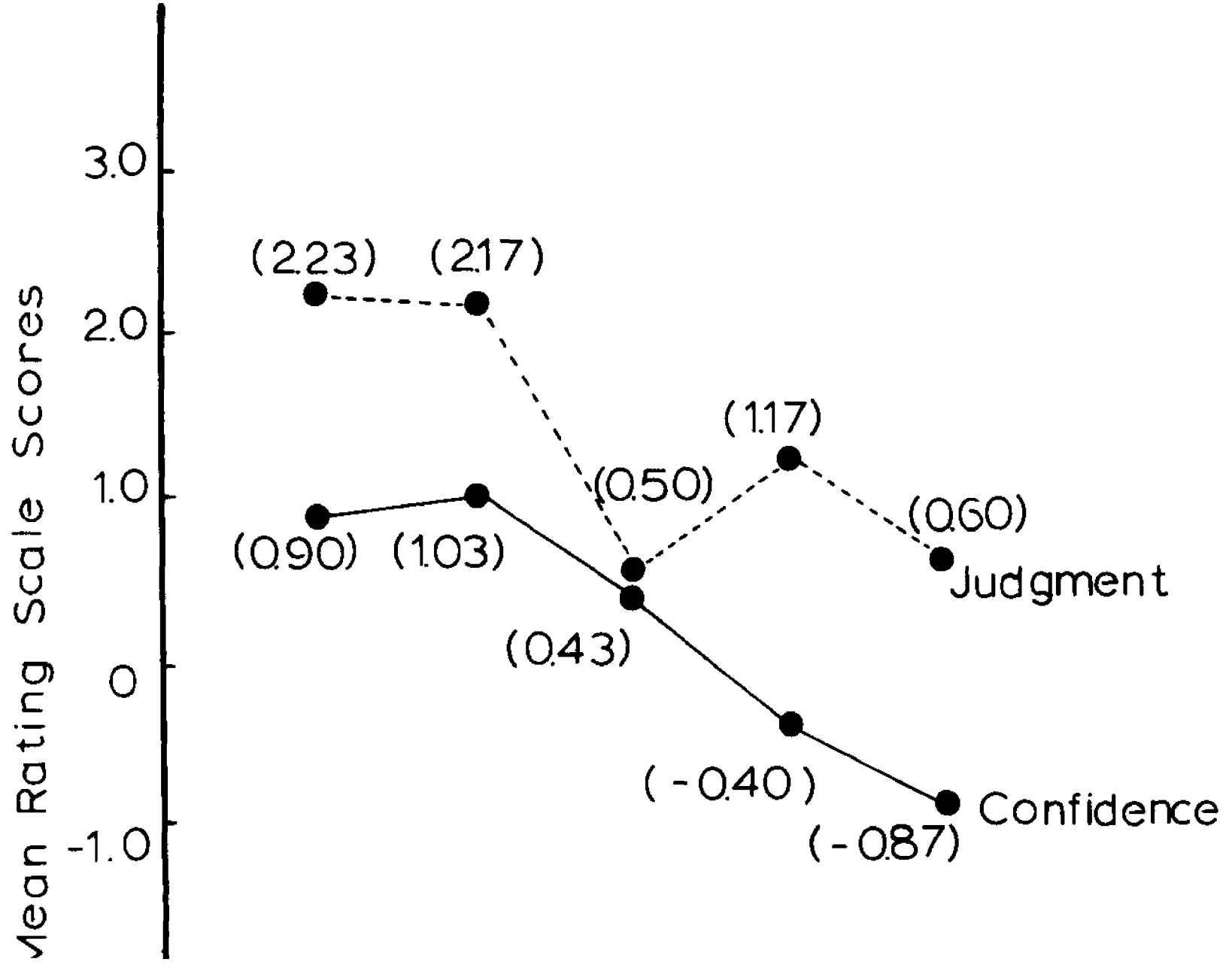
TABLE 6

Confidence Score Means and Standard Deviations Under Each Ratio of Agreement

N=150 (n=30)

Ratio of agreement	Mean	Standard deviation
8/8[1]	0.90	2.79
7/8	1.03	1.83
6/8	0.43	2.47
5/8	-0.40	2.88
4/8	-0.87	2.89

[1]The data for the 8/8 groups are also reported for the analyses of the consensus experiment.


Mean Rating Scale Scores
3.0
2.0
1.0
0
-1.0
(2.23)
(2.17)
(1.17)
(0.50)
(0.60)
(0.90)
(1.03)
Judgment
(0.43)
(-0.40)
Confidence
(-0.87)

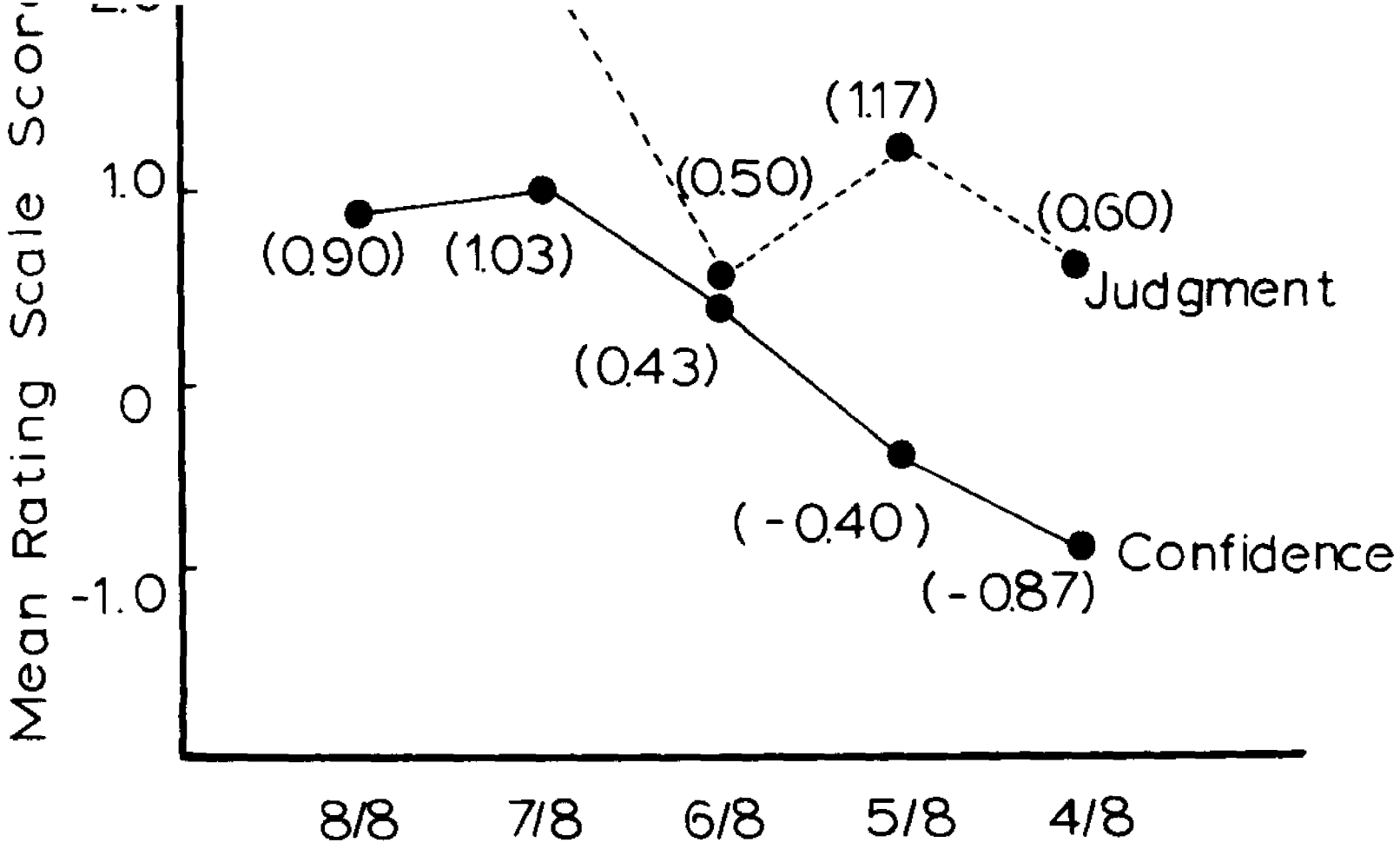


Figure 1.

Mean Judgment and Confidence Scores for Each Ratio of Agreement

N = 150 (n = 30)

TABLE 7

Analysis of Variance and Test for Trend on Judgment Scores for Each Ratio of Agreement

Source	S.S.	d.f.	M.S.	F
Treatment	82.933	4	20.733	5.711*
Linearity	54.613	1	54.613	15.045*
Deviations	28.320	3	9.440	2.601
Error	526.400	145	3.630	
Total	609.333	149		

*Statistically significant at pre-chosen alpha of .05.

TABLE 8

Analysis of Variance and Test for Trend on Confidence Scores for Each Ratio of Agreement

Source	S.S.	d.f.	M.S.	F
Treatment	82.040	4	20.510	3.048*
Linearity	74.003	1	74.003	10.998*
Deviations	8.037	3	2.679	
Error	975.700	145	6.729	
Total	1057.740	149		

*Statistically significant at pre-chosen alpha of .05.

TABLE 9

Analysis of Variance on Judgment Scores Across All Nine Experimental Conditions

Source	S.S.	d.f.	M.S.	F
Treatment	212.45	8	26.556	9.211*
Error	752.60	261	3.697	
Total	965.05	269		

*Statistically significant at pre-chosen alpha of .05.

TABLE 10

Analysis of Variance on Confidence Scores Across All Nine Experimental Conditions

Source	S.S.	d.f.	M.S.	F
Treatment	157.21	8	19.651	3.289*
Error	1559.40	261	5.973	
Total	1716.61	269		

*Statistically significant at pre-chosen alpha of .05.

APPENDICES

Summary Data on Measure of Interest

'Interest in Seeing the Play' Score Means and Standard Deviations for all Nine Experimental Conditions. N = 150 (n = 30)

Group	Mean	Standard Deviation
2	0.30	2.47
3	1.20	1.83
4	1.20	2.55
6	0.83	2.38
8	0.87	2.34
7 vs 1	1.30	2.02
6 vs 2	0.37	2.12
5 vs 3	0.67	2.14
4 vs 4	-0.73	1.91

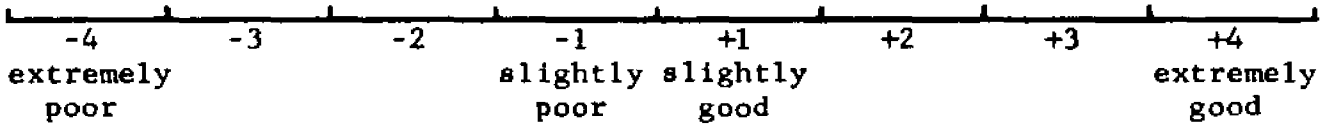
Analysis of Variance and Test for Trend on 'Interest to See the Play' Scores for Each Ratio of Agreement.

Source	S.S.	d.f.	M.S.	F
Treatment	70.227	4	17.557	3.897*
Linearity	44.083	1	44.083	9.785*
Deviations	26.144	3	8.715	1.984
Error	653.267	145	4.505	
Total	723.494	149		

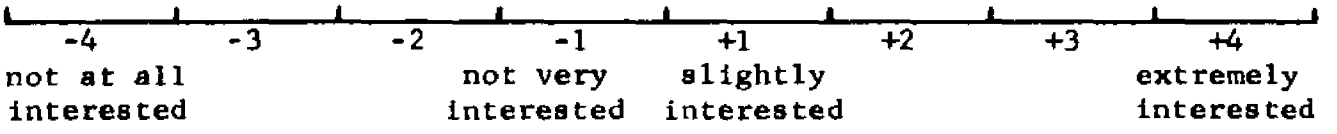
Questionnaire Administered

Group _____

I. Please indicate on the basis of what you have just heard how good you think the play is by placing a check in the most appropriate interval.



II. Please indicate on the basis of what you have just heard how interested you are in seeing this play by placing a check in the most appropriate interval.



NOTE **

Before you turn the page, please make sure you have completed both rating scales. You are not permitted to change these ratings once you have turned to the following page.

III. You have made a rating on the preceding page concerning how good you think the play is. We are now interested in knowing how confident you feel about this judgment. Please check the alternative closest to how certain you feel about this rating.

____ (a) I feel extremely confident of the judgment I made.

____ (b) I feel moderately confident of the judgment I made.

____ (c) I feel slightly confident of the judgment I made.

____ (d) I do not feel very confident of the judgment I made.

____ (e) I am extremely unsure of the judgment I made.

Questionnaire Used to Collect Normative Data.

PART I

We are interested in finding out the degree of certainty or confidence in one's judgment which the following statements suggest to you. If a -4 rating implies the most extreme uncertainty while a +4 rating the most extreme certainty or confidence, please rate each of the following statements using this scale of -4 through +4.

____ (1) I feel extremely confident of the judgment I made.

____ (2) I feel moderately confident of the judgment I made.

____ (3) I feel slightly confident of the judgment I made.

____ (4) I do not feel very confident of the judgment I made.

____ (5) I am extremely unsure of the judgment I made.

Summary of Normative Data

N=101 (students in Freshman Program in the City University)

Item	Median	Semi-interquartile range
1.	3.7	.65
2.	2.2	.60
3.	0.8	.80
4.	-1.9	.75
5.	-3.8	.50

Sequence of Pro-Con Statements in Tape-Recorded Discussions

7 vs 1 Discussions

negative	positive
negative	negative
negative	positive
negative	positive
negative	positive
positive	positive
negative	positive
negative	positive

6 vs 2 Discussions

positive	negative
positive	negative
positive	positive
positive	positive
positive	negative
positive	negative
negative	negative
negative	negative

5 vs 3 Discussions

positive	positive
positive	negative
positive	negative
negative	positive
negative	negative
positive	negative
positive	negative
negative	positive

4 vs 4 Discussions

negative	positive
negative	positive
positive	negative
positive	negative
positive	negative
positive	negative
negative	positive
negative	positive

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