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TITLE THE EFFECT OF DIFFERENT DIMENSIONS OF DISAGREEMENT ON THE COMMUNICATION PROCESS IN SMALL GROUPS

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THE EFFECT OF DIFFERENT DIMENSIONS OF DISAGREEMENT ON THE COMMUNICATION PROCESS IN SMALL GROUPS

by

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CHAPTER I

INTRODUCTION

For some time now interest has been growing in the determinants of the pattern of communication in small groups and in the factors affecting achievement of uniformity of beliefs and attitudes. Such uniformity is the result of a continual process of social influence that goes on in face-to-face groups.

The fact that conformity to group standards does occur is well documented. Evidence has been found both in the laboratory and in existing social settings. In his anecdotal study of a street corner gang, Whyte (9) vividly illustrates the communication pattern among the members of the gang and their conformity to group standards. Roethlisberger and Dickson (6) present similar evidence in a factory setting. These findings are representative of all such studies. The evidence from laboratory experiments concerning the achievement of uniformity in groups dates back to some of the early studies of group effects (2, 8). More recent studies add further weight to those findings (1, 5, 7).

Why does this uniformity occur?

If there exist discrepancies in opinions or beliefs in a group, pressures toward uniformity will arise if either one or both of the following conditions prevail (3):

1. The subjective validity with which individual members hold these beliefs or opinions depends upon the extent to which agreement concerning them exists in that group.

2. It is necessary that such uniformity be achieved in order that the group reach a desired goal.

The relationship of certain variables to the degree of such pressure toward uniformity has been explored. Findings indicate that the magnitude of the pressures toward uniformity is a positive function of:

1. The amount of the discrepancy in opinion that exists (5).

2. The attractiveness of the group for its members (1, 4).

3. The importance of the belief or opinion for the functioning of the group (5).

What are the effects of these pressures toward uniformity?

The greater the pressures, the greater will be the forces on individual members to reduce discrepancies in opinion, i.e., to achieve uniformity. Greater uniformity can be achieved in any of the following three ways: 1) by changing the opinion of the deviate to accord with the group standard, 2) by changing one's own opinion to accord with the group standard, or 3) by excluding from the group those members whose opinions are discrepant. A number of recent experiments have corroborated the existence of the above tendencies. They have shown that:

1. The greater the pressures toward uniformity, the greater will be the amount of communication (the means by which influence to change is exerted) between those whose opinions are discrepant from each other (5).

2. The greater the pressures toward uniformity, the greater will be the amount of change of opinion toward the group standard (1, 5).

3. The greater the opportunity for subgroup formation, i.e., for changing the composition of the psychological group, the greater will be the tendency to cease communicating to deviates (5, 7). Schachter (7) found that rejection of the deviate accompanied this tendency.

The purpose of this experiment

Festinger and Thibaut (5) found that the above tendencies occurred in an experimental set-up where disagreement was possible along a single range of opinion. Most everyday life situations where individuals find themselves in groups, are more complex in the sense that no single, clear dimension of disagreement exists. Is there reason to believe that the above relationships hold in more complex situations?

The experiment reported here has as its purpose the exploration of a situation in which two dimensions of disagreement exist. Findings here, similar to those of Festinger and Thibaut, would make the theory more generalizable.

CHAPTER II

THE EXPERIMENT

Subjects

The 393 subjects used in this experiment were recruited from the various sections of the freshman English class at the University of Michigan. All subjects were volunteers. They were assigned randomly to the experimental groups, care being taken to keep the number of acquaintances in each group to a minimum. Thirty-five groups were studied, 19 of which were composed entirely of women, and 16 of men.

The general experimental setting for all groups

Each group assembled in the experimental room and was seated at tables arranged in a circle.

In order to create the two dimensions of disagreement with which we are concerned, the following procedure was followed. Information on a printed form was passed out to each subject. The information was introduced as a bill concerning federal aid to education. They were told that it was not a real bill but was typical of proposals which have been made in the past. The following is the actual text they received:

> The bill in question which you will vote on has the following two provisions:
>
> 1. There should be a basic curriculum in all primary and secondary schools throughout the country. This curriculum should be planned by a central federal board. Deviations from this core curriculum will be allowable based on a joint decision by the central board and the individual states.
>
> 2. Funds within the states will be allocated by a state board made up of an equal number of board members from the federal government and the individual states.
>
> Your vote will be either for or against the bill.

On a slip of paper which was then passed out, they were told to vote on the bill, indicate which issue in the bill they considered as more important (the planning of curricula or the allocation of funds), and from the following ranges of opinion, they were asked to indicate what their opinion was on each issue.

Below are the two issues of the bill which you will discuss. Each of these issues is accompanied by a 7 point opinion scale.

The Allocation of Funds (F)

1. The allocation of funds to the school districts should be supervised by a central board. State representatives should familiarize the federal board with conditions in the states.

2. The central board should have major responsibility for the allocation of funds with a representative of the state sitting in on the central board meetings.

3. The central board should have major responsibility for the allocation of funds but it should base its decisions mainly on the suggestions of representatives of the individual states.

4. The responsibility for the allocation of funds should be shared equally by the individual states and the federal government.

5. State boards in the individual states should have the major responsibility. A representative of the federal government should be an active member of each state board.

6. The state board should have the greater responsibility but a representative of the federal government should be present to offer suggestions.

7. The state board should have complete autonomy in making its decisions. That is, the federal government should not be involved.

Curriculum Planning (C)

1. The same basic curriculum throughout the country in schools to which the federal government would give financial aid. That is, all federal aided schools would teach the same basic course work.

2. The same basic curriculum, with certain deviations allowable on the decision of a central curriculum planning board.

3. The same basic curriculum, with certain deviations from it allowable. These deviations should be based on suggestions by the individual states. Final decision by the central board.

4. Deviations from the basic curriculum allowable, based on a joint decision by the central board and the individual states.

5. Deviations, allowable, the board to act mainly on decisions by the individual states.

6. The federal government should afford advisory service to the states only, with no basic curriculum for the schools.

7. No federal curriculum planning whatsoever, not even advice.

The subjects were told that this would be a preliminary vote, preparatory to a group discussion of the bill. A final vote would be taken after the discussion.

The experimental conditions

Two experimental variables which we manipulated were homogeneity-heterogeneity and pressures toward uniformity. By homogeneity we mean the perception on the part of a group member that all the others in the group are equal to him with respect to knowledge, skills, and ability required to perform the task involved. Given the perception of homogeneity, there should be little basis for rejecting anyone from the group. By heterogeneity we mean that a group member perceives that there exists a wide range of interest, skill, and ability possessed by the members of the group. Given the perception of heterogeneity, a basis in fact is provided for rejecting deviates.

In the high pressure toward uniformity conditions, a situation was created favorable to the development of strong pressures toward uniformity by introducing the desire for group locomotion.

The manipulations of homogeneity-heterogeneity and two degrees of pressure toward uniformity resulted in four experimental conditions: homogeneity-high pressure, homogeneity-low pressure, heterogeneity-high pressure, and heterogeneity-low pressure. The male and female groups

were equally distributed among the four conditions, five female and four male groups in each condition, except for the homogeneous-high pressure condition which lacked one female group.

The instructions given to create the experimental conditions

The variables discussed above were verbally induced by the experimenter before the initial vote was taken.

To create the perception of homogeneity the group was told:

> "In this group we got people together who are, as nearly as possible, equally qualified to carry on this discussion. We checked the volunteer forms you filled out in class on which you indicated certain of your background qualifications. Also, the Dean gave us permission to check your past academic records from which we got certain pertinent information about each of you. On the basis of all this information we were able to assign to everyone who volunteered a combined rating of interest, skill, and ability concerning the problem you will be discussing. The ratings in this group are all equal. Therefore, during your discussion you should feel that you are no better or no less qualified than anyone else in the group."

To create the perception of heterogeneity, the group was told:

> "For this group we scheduled people who are very different with respect to their being able to carry on this discussion. We checked the volunteer forms you filled out in class on which you indicated certain of your background qualifications. Also, the Dean gave us permission to check your past academic records from which we got certain pertinent information about each of you. On the basis of all this information we were able to assign to everyone who volunteered a combined rating of interest, skill, and ability concerning the problem you will be discussing. The ratings in this group are very different. Therefore, during your discussion you should feel that there are some people here who are extremely well qualified to discuss the problem and some who are poorly qualified, and some who fall in between."

To create conditions favorable to the development of strong pressures toward uniformity, the groups were told:

> "For this group, the experiment is divided into two parts. We of the Research Center for Group Dynamics are interested in the first part, that is, how you communicate among yourselves on this problem. We are not alone in our interest in you. The Political Science Department would like to follow up your discussions by observing how you are able to handle yourselves in a life-like political discussion. They feel that marks are not

the best judge of the calibre of students at Michigan. We are performing this experiment with a large number of groups and have selected this group as a typical group of men (women) students. The Political Science Department is interested in how a typical group like this can function when faced by a group of people who have opinions which are radically different from those in this group. For that purpose they have asked one of the local, old line political groups in Ann Arbor to meet with this group to discuss the problem of federal aid to education. After you have finished discussing the problem among yourselves, we are going to take you down the hall to another room where members of this local group will be waiting for you and you will discuss the problem with them. You are going in there as a group to face them as a group. I assure you that you will be up against considerable opposition. Even if their opinions are not very different from some of your own, their way of approaching the problem will be quite different. The years of experience that they have had have caused their opinions to jell into a rigid outlook about political problems such as this. Young people like yourselves invariably approach these issues from quite a different angle. Essentially it will be a battle between youth and age. It should be very interesting to see how you measure up to this old line traditionalism. There will be members of the staff of the Political Science Department there to observe how you perform."

This instruction was given in order to make the subjects dependent upon the group. The support they received in the group would affect the certainty with which they held their opinions in the subsequent discussion with the local political group representatives. Thus, we expected that pressures toward uniformity would arise.

In the low pressure conditions this instruction was not given.

The course of the experiment

Each subject had two metal stands in front of him. At each place there was a different identification letter printed on a 5x8 index card. In addition, there were 2 sets of printed cards. One set ranged from C1 to C7, the other from F1 to F7, corresponding to the opinions on both issues.

The instructions proceeded as follows:

"Since we want to keep a record of the discussion, you will discuss the problem by writing notes to each other. This will also help to keep the discussion from getting out of hand. In order that you be identified, each of you has a letter printed on a 5x8 card. Please take that letter and place it on one of the two metal stands in front of you. You each have, at your place, two sets of cards, corresponding to the two issues in the bill. In each set there are seven cards, corresponding to the seven possible opinions on each issue. Select the card which represents your opinion on the issue you considered as more important and place it on the other stand.

"Everyone should be able to see your identification letter and your opinion so that each of you can write to anyone in the group, knowing which issue the person to whom you are writing selected as more important and what that person's opinion is about it.

"We assume that the card you have placed in the mount may not represent your last word on the subject. No one will be holding you to your present selection. When you change your opinion, please remove the card which represents your old opinion and replace it with another card which represents your new one. There is no limit to the number of times you can change your opinion, but each time that you do, please change to the corresponding card. There is also no restriction holding you to the issue you selected as more important and you can feel free to change your mind about that and change to the other issue. If you do change your mind, please change to the other set of cards. Don't forget, if you change your opinion or change to the other issue, please change to the corresponding card. In the past people have changed their minds, but have failed to change the card in the mount and considerable confusion resulted.

"You may begin your discussion by writing notes on the pads which have been passed out. Please do not sign the notes either with your name or with your identification letter. Indicate only the person's letter to whom the note is addressed. There is a place for that on the top of each note. Be sure that the proper card is in the mount and that you can see all the other cards. When you finish writing a note, raise your hand and the note will be picked up and delivered to its addressee. We will write the time of delivery on the back of it. Now, begin."

The slips on which they indicated their choices were then collected.

Since we were interested in studying the pattern of communication, we did not want a subject to write to someone simply because he had received a note from that person. If a subject knew who wrote a note he had received, we would probably end up with pairs of subjects



communicating with each other. Therefore, we asked the subjects not to reveal their identity in their notes. It was necessary for us, however, to identify the sender of every note. Unknown to the subjects, the staple was in a different position on each of the pads. Thus, when a subject tore a note from his pad, it was marked so that we could identify the writer.

During the discussion a record was kept of the exact time of opinion and issue changes as evidenced by changes in the cards.

The discussion lasted for 20 minutes. At the end of that time, another slip was passed out on which the subjects indicated their final vote and opinions. That completed, a questionnaire, designed to test the effectiveness of the experimental manipulations, was passed out. When the subjects had answered the questionnaire, the experiment was over. After the experiment, the groups were given an explanation of what we were looking for and we apologized to them for the untruths we had told.

Summary of the design

All 35 groups were exposed to the same general experimental situation and were distributed equally among the four experimental conditions which were created by different additional information. The conditions were:

Homogeneity-high pressure (Hom hi) Heterogeneity-high pressure (Het hi)

Homogeneity-low pressure (Hom lo) Heterogeneity-low pressure (Het lo)

CHAPTER III

THE RESULTS

We shall now examine the experimental data which are relevant to testing our hypotheses. There are four kinds of data which are pertinent: 1) evidence as to the success of the experimental manipulations, 2) the content of the communications, 3) the direction of the communications, i.e., to whom they were addressed, and 4) the changes of opinion that took place during the discussion.

The success of the experimental manipulations

The questionnaire (see appendix), administered after the group discussion, was designed to determine the effectiveness of the experimental manipulations.

The homogeneity-heterogeneity variable

In order to determine whether or not the instructions intended to produce perceptions of homogeneity and heterogeneity actually affected the subjects' perceptions of the group composition, the subjects were asked to select one or two of the following alternatives concerning the background and experience of the others in the group:

a) all were equal to me

b) some were better qualified than I

c) some were less qualified than I.

Table I presents the frequency of choices of these alternatives by subjects in the four experimental conditions.

This table indicates that the tendency to perceive the others in the group as equally qualified was greater in the homogeneous conditions than in the heterogeneous conditions ($p = .001$ by Chi-square). If we assume

TABLE I

Percentages of Subjects Choosing Alternatives Concerning Perceptions of Background and Experience of others in the Group

		Homogeneous	Heterogeneous
Hi-Pressure	All equally qualified	75.0	40.2
	Some better qualified	12.1	34.0
	Some less qualified	14.1	11.3
	Some better, some less	8.7	13.4
	All equal, some better	0.0	0.0
	All equal, some less	1.1	1.0
Lo-Pressure	All equally qualified	71.0	39.6
	Some better qualified	11.0	28.1
	Some less qualified	10.0	14.6
	Some better, some less	4.0	16.7
	All equal, some better	1.0	0.0
	All equal, some less	3.0	1.0

that the answers to the question are valid indicators of the perception referred to, we may conclude that the homogeneous-heterogeneous manipulation was at least partially successful.

We may also raise the question of how the heterogeneous instruction was interpreted by the subjects. Referring again to Table I, we find that, in the heterogeneous conditions, a greater proportion of subjects chose the alternative, "some were better qualified than I" than chose, "some were less qualified than I" ($p = .001$ by Chi-square). In examining the same data for the homogeneous conditions we find no difference. It seems then that in the heterogeneous condition many subjects perceived others as better qualified, i.e., as experts. This fact will be important in our interpretation of the results.

The pressures-toward-uniformity variable

There were a number of questions in the questionnaire designed to determine the effectiveness of the instructions intended to produce high pressure toward uniformity. Significant results appeared only in the answers to the question, "How much did you find yourself in disagreement with the opinions of the others who had chosen the same issue as important?" The subjects were asked to circle a point on a five point scale ranging from "extremely" to "none at all." This question was designed to determine whether or not differences of opinion would be perceived. To get a measure of deviancy, the discrepancy between the opinion of each subject and those of the others in his group, we computed the average deviation of his opinion from those of the others who had chosen the same issue as important. We arbitrarily divided the group into deviates and agreers (those who deviated only slightly).

Table II presents the mean response to the above question by the deviates and by the agreers. The smaller the number, the greater was the perceived disagreement.

TABLE II

Perceived Disagreement of Opinion on the Important Issue*

	Homogeneous		Heterogeneous	
	Deviates	Agreers	Deviates	Agreers
Hi-Pressure	2.81	3.49	2.91	3.95
Lo-Pressure	2.89	3.09	3.00	3.35

*The smaller the number, the greater the perceived disagreement.

We see that there is a difference between the deviates and agreers in the high pressure conditions ($p = .001$ by Chi-square) but not in the low pressure conditions. In the high pressure conditions the agreers tended to perceive agreement, whereas in the low pressure conditions they perceived as much disagreement as did the deviates. The most plausible interpretation of this result is that, due to dependency upon others in the group in the high pressure conditions, agreement was important to them and hence it was perceived. In the low pressure conditions, being in agreement with the group did not matter so much to them since they were less dependent on others. Therefore, agreers tended to perceive as much disagreement as did the deviates.

The majority-minority variable

A variable which became important in the analysis was the unequal division in the groups with respect to the choice of the more important

issue, resulting in a majority and a minority. All but four of the groups dichotomized unequally, one equal division occurring in each of the four conditions. Since this majority-minority division was important, we were interested in checking whether being in a majority or a minority would be perceived as such. Fortunately, the responses to the question, "At the outset, how much did you find yourself in disagreement with the rest of the group on the importance of the issue (curriculum planning or the allocation of funds) you had chosen?", provided the desired information. The subjects were asked to indicate, on a five point scale ranging from "extremely" to "none at all," how much disagreement they perceived.

TABLE III

Perceived Discrepancy on Choice of Important Issue*

	Homogeneous		Heterogeneous	
	Majority	Minority	Majority	Minority
Hi-Pressure	3.16	2.41	3.08	2.37
Lo-Pressure	3.07	2.29	2.83	2.55

*The lower the number, the greater the perceived discrepancy.

Table III indicates that the subjects in the minority perceived greater disagreement than those in the majority ($p = .001$ by Chi-square). We may conclude, therefore, that being in the majority or the minority was perceived as such. The results of the experiment will be presented separately for these majority and minority subgroups.

At this point a brief theoretical statement of what we would expect the interaction to be between the homogeneity-hetrogeneity and the

pressures toward uniformity variables should help the reader to follow subsequent interpretations of the data.

Considerable dependency upon others in the group was engendered in the high pressure conditions. In the Hom-hi condition, where the others in the group were perceived as having equal ability, the subjects depended upon all equally and, therefore, upon the group as a whole. Consequently we would expect that pressures toward uniformity should arise. In the Het-hi condition, where some group members were perceived as experts, dependency was not upon the group as a whole but upon the experts. Therefore, we would expect that strong pressures toward uniformity should not arise. What should arise are pressures to agree with experts. With this preview in mind, let us proceed with the analysis.

The amount of communication

We would predict that the greater the need for support from the group, the stronger will be the forces on people in the group to reduce discrepancies of opinion. Therefore, the greater will be the amount of communication among group members.

Table IV presents the average number of notes per person written by members of the majority and the minority in the four conditions.

TABLE IV

Total Average Number of Notes

	Homogeneous		Heterogeneous	
	Majority	Minority	Majority	Minority
Hi-Pressure	3.80	3.84	3.72	3.22
Lo-Pressure	3.43	3.41	3.45	3.46

We see that there is a greater tendency (though a statistically insignificant one) for the subjects in the Hom-hi condition to write more notes than those in the Hom-lo condition. This is in line with theoretical expectations. In the Hom-hi groups, due to the greater need for support from others who were perceived as equals, pressures toward uniformity arose. Therefore, the subjects in those groups communicated more than those in the Hom-lo condition. The data for the heterogeneous conditions are somewhat different. There we see that the majority wrote more in the Het-hi than in the Het-lo condition. This, we hypothesize, is due to the greater need for support in the Het-hi groups. However, the minority members wrote less than did those in the majority, even somewhat less than did the minority members in the Het-lo condition. The following is a suggested interpretation. We would expect subjects in the Het-hi minority to be as dependent as those in the majority and, therefore, the forces on them to communicate should be as great. Since they communicated less, we may infer the existence of restraining forces against communicating. In the heterogeneous conditions, there were pressures to agree with experts. Since subjects were more in need of support in the Het-hi groups, those pressures should be greater there than in the Het-lo groups. The Het-hi minority disagreed with experts, upon whom they were very dependent, concerning both dimensions. They were, therefore, less confident of their opinions than were those in the majority, who disagreed less on one of the dimensions. This lack of confidence generated forces against communicating.

The results on total amount of communication, while suggestive, are by no means conclusive evidence in support of the hypothesis that

the greatest pressures toward uniformity were in the Hom-hi condition. An analysis of the content of the communications will lend additional support to our interpretations.

If we analyze what the subjects were exerting influence about, we would have an indication of the kind of support they were seeking. For example, if we found that the minority communicated more concerning one dimension of disagreement than did the majority, we could infer that the minority was more in need of support on that dimension.

In order to analyze the content of the communication as it related to the two dimensions of disagreement, each note was coded as either: 1) attempting to change the recipient's choice of which issue was more important (issue influence), or 2) attempting to change the recipient's opinion on that issue which he had published on the card in front of him (opinion influence).

Issue influence

Table V presents the average number of issue influence notes written by the majority and by the minority in the four conditions.

TABLE V

Average Number of Issue Influence Notes Written

	Homogeneous		Heterogeneous	
	Majority	Minority	Majority	Minority
Hi-Pressure	0.52	1.28	0.42	0.73
Lo-Pressure	0.43	0.87	0.44	0.69

The data indicate that the minority wrote more such notes than did

the majority in all conditions ($p = .01$ by t).* Since the amount of support an individual has for an opinion is a function of the number of people who agree with him, those in the minority had less support than those in the majority concerning the relative importance of the two issues. We would therefore expect the minority to need additional support concerning the relative importance of issues and hence to exert a greater amount of influence concerning this dimension of disagreement.

The data also show that the minority in the homogeneous conditions wrote more issue influence notes than in the heterogeneous conditions. While not statistically significant, this result is in line with what we would expect. The division concerning which issue was more important created a basis for group subdivision. In the heterogeneous conditions, subdividing was easier since another basis in fact existed for it, namely, the individual differences in background and experience. In the homogeneous conditions, this additional basis did not exist since subjects tended to perceive others as equals. Group subdivision, therefore, was not so easy. The smaller amount of issue influence in the heterogeneous conditions indicates a greater tendency toward group subdivision. In the homogeneous groups, especially in the Hom-hi condition, since subjects were equally dependent upon all others in the group, pressures toward uniformity arose in the group as a whole. The most obvious dimension along which this uniformity could be achieved was the disagreement which tended to divide the group.

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*The difference was tested considering the group as a unit. The means for the majority and the minority were considered as dependent. This method was used to test all the majority-minority differences in content of communication.

The table indicates that the differences among the experimental conditions had no appreciable effect on the communication of majority members. Since they had more support than did the minority, they were less concerned about this disagreement. The strong pressures toward uniformity in the Hom-hi condition resulted in a slightly greater tendency to attempt to achieve uniformity than in the other conditions.

Opinion influence

Since the published cards indicated a subject's opinion only on the issue he considered more important, opinion influence could only be exerted concerning that issue which the recipient of the note considered more important. A subject could, however, write opinion influence notes either to those who agreed with him as to which issue was more important, or to those who had chosen the other issue as more important. The opinion influence notes were coded accordingly as either: 1) opinion influence concerning the issue the sender chose as more important (opinion influence on the important issue), or 2) opinion influence concerning the issue the sender chose as less important (opinion influence on the less important issue).

TABLE VI

Average Number of
Opinion Influence Notes

		Homogeneous		Heterogeneous	
		Majority	Minority	Majority	Minority
Hi-Pressure	Important Issue	2.35	1.15	2.35	0.93
	Less important issue	0.93	1.41	0.95	1.56
Lo-Pressure	Important issue	2.25	1.06	2.05	1.35
	Less important issue	0.75	1.48	0.96	1.42

Table VI presents the average number of both types of opinion influence notes for the majority and the minority in each of the four conditions.

The data show that, in all conditions, the members of the majority wrote more notes attempting to change opinions on the issue they considered as more important than they did on the less important issue. The minority, however, wrote more notes on the less important than on the more important issue. This result seems paradoxical since one would expect a subject to exert more influence about opinions on the issue he considered as more important. The paradox is only apparent since, as we shall see, it is a result of there being more subjects in the majority than in the minority.

Opinion influence on the important issue, due to the experimental set-up, is synonymous with communication within the majority or within the minority. Opinion influence on the less important issue is synonymous with communication by the majority to the minority, or vice versa. Thus, minority members wrote to fewer people about opinions on the important issue than did majority members. This situation was reversed for the communication about the less important issue. It would seem, therefore, that the absolute amount of communication on either issue is not the same as the actual amount of influence exerted on people. One must take into account the number of possible recipients of a message.*

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*In analyzing the issue influence notes, we did not take the number of possible recipients into account since subjects had a choice of what they wrote about to people who had chosen the other issue as more important. They could write about the relative importance of the issues, or about opinions on the other issue. It was therefore meaningful to separate out the absolute amount of issue influence and to have made the comparisons we did.

Let us construct a hypothetical example in order to see how the absolute amount of communication relates to the actual amount of influence exerted upon others. Let us suppose that there are eight subjects in the majority and four in the minority (this roughly approximates how the groups divided on the average). Let us also assume, that for all subjects, the likelihood is twice as great for communicating about opinions on the important issue as for communicating about opinions on the less important issue. That is, for each person the probability for writing about the important issue is .67, whereas for writing about the less important issue it is .33. Since it is twice as probable that a minority member will write to another subject in the minority than to a subject in the majority, let us assign a weight of two to the three communication possibilities in the minority (he cannot write to himself), and a weight of one to each of the eight possibilities in the majority. Summing over all possible recipients gives him a weighted total of 14 possibilities. The probability of his writing a note to someone in the minority is 6/14 or .43. The probability of his writing to someone in the majority is 8/14 or .57. If we divide the first probability figure by the second, we get a ratio of .76. Thus, given twice the likelihood of writing to a minority member, our hypothetical subject would write .76 times the number of notes to other minority members as he would to people in the majority. If, in Table VI, we divide the number of notes written on the more important issue by the number written on the less important issue by all minority members, we get a ratio of .77. The ratio we computed in our example only approximates what we would get in the real case since the number of subjects in the majority and the minority are not exactly eight and

four. We can, however, infer from the actual data that the subjects in the minority were approximately twice as much concerned with opinions on the important issue than they were with opinions on the less important issue. In our example, the same calculation for a majority member yields a likelihood of his writing 3.5 times as many notes to other majority members as he would to those in the minority. The data indicate that the actual ratio is approximately 2.5. We can therefore infer that the actual likelihood was less than twice as great for writing to another majority member. If we reverse the reasoning we used in our example, and if, from the data, we calculate the probabilities for the majority, they are roughly .6 for writing on the important issue and .4 for writing on the less important issue. In explaining the paradox we are led to the opposite conclusion, namely, that the minority was more concerned with opinions on the important issue than was the majority. Let us delay, for the moment, the interpretation of this result.

To correct for the likelihood of writing more notes to the subgroup that contained more people, we divided the average number of notes written by the number of possible recipients in the subgroup. Thus, using the above example, if the total number of notes written within the minority was six, the average was 1.50 notes per person. Since there were three possible recipients of a given note written within the minority, the average was divided by three. This operation gives us a corrected index of 0.50 notes per person/per possible recipient. If the minority members wrote eight notes to the majority, the index would be 0.25 notes per person/per possible recipient (8/4/8). This index gives us a measure of the intensity of influence by taking into account the number of possible recipients. These indices were calculated separately

for each subgroup for both the important and the less important issues. The averages are presented in Table VII.

TABLE VII

Corrected Communication Indices for Opinion Influence

		Homogeneous		Heterogeneous	
		Majority	Minority	Majority	Minority
Hi-Pressure	Important issue	.33	.54	.34	.40
	Less important issue	.26	.17	.32	.22
Lo-Pressure	Important issue	.34	.47	.35	.43
	Less important issue	.20	.20	.26	.23

We see from the data, as we would expect, that in all subgroups communication per possible recipient was greater on the important issue than on the less important issue ($p = .001$). We also find, as we would expect from the calculations we made in the above example, that for the important issue the indices are higher for the minority than for the majority in all conditions ($p = .01$). This leads us to the inference that the need for support was greater within the minority than within the majority. The greater need for additional support in the minority with respect to the relative importance of the two issues caused them to be more concerned about their opinions on the one they had chosen as more important. They were seeking additional support both from the total group concerning issue disagreement and they were also seeking support within their own subgroup. Thus, the division of the group into a majority and a minority caused the subjects in the minority to be more dependent upon the group as a whole than were those in the majority,

and in addition, they were more dependent upon their own subgroup.

The data also show that there were differences among the conditions. None of these differences are statistically significant. We see, however, that in the minorities in the homogeneous conditions there is relatively more influence exerted on the important issue than on the less important one than there is in the minorities in the heterogeneous conditions. This result is consistent with the hypothesis that the pressures toward uniformity were greater in the homogeneous than in the heterogeneous conditions. The difference is greatest for the Hom-hi minority where the pressures were the greatest.

The direction of communication

Results from the Festinger and Thibaut experiment showed that the volume of communication between two people is a function of the magnitude of the discrepancy between their opinions. We wanted to determine whether or not the above relationship would hold in this experiment.

Since we knew the opinions of everyone on both issues, we were able to determine how far from the extreme opinions on either issue was the person to whom any note was directed. It was possible, of course, that at a given time, more than one person held a given opinion, and/or that two opinions, one in either direction, were extreme with respect to the opinion of the sender of a message. Since, by chance, everyone in the group had an equal probability of receiving a message from any other person, a communication sent to a person was divided by the number of people who were, at the time of delivery, in the same relationship to the sender of the message as was the recipient. Thus, if three persons were at extremes with respect to the sender, the number of words in a message was divided by three. In order that

the direction of any message could be determined, there had to be at least one extreme and a "middle" relationship to which the sender could address the message. Unfortunately, the data for communication to the minority very often did not meet this requirement. We computed the direction of communication separately for the first and second halves of the discussion in order that we could study changes over time.

Figures 1 and 2 present the direction of communication within the majority and within the minority for the first and second halves of the discussion.

We notice that communication is always greatest to extremes. This corroborates the Festinger and Thibaut findings.

There appear to be some changes over time, especially for the majority. There is a tendency for the communication to extremes to fall off slightly over time. Furthermore, there is also a tendency for communication to 2-away to increase over time. This appears to be especially true for the majority. When extremes are rejected, there will be a tendency for communication to be directed to those who are less extreme. Therefore, a decrease in communication to extremes and an increase to 2-away indicates that there was a tendency to form subgroups. This tendency seems to be greater for the majority, which is consistent with the conclusions we reached in examining content. That is, since the members of the minority were more dependent than those in the majority it was less easy for them to reject others from their subgroup.

The next logical step would be to determine whether or not the experimental conditions had an effect upon the tendency to communicate

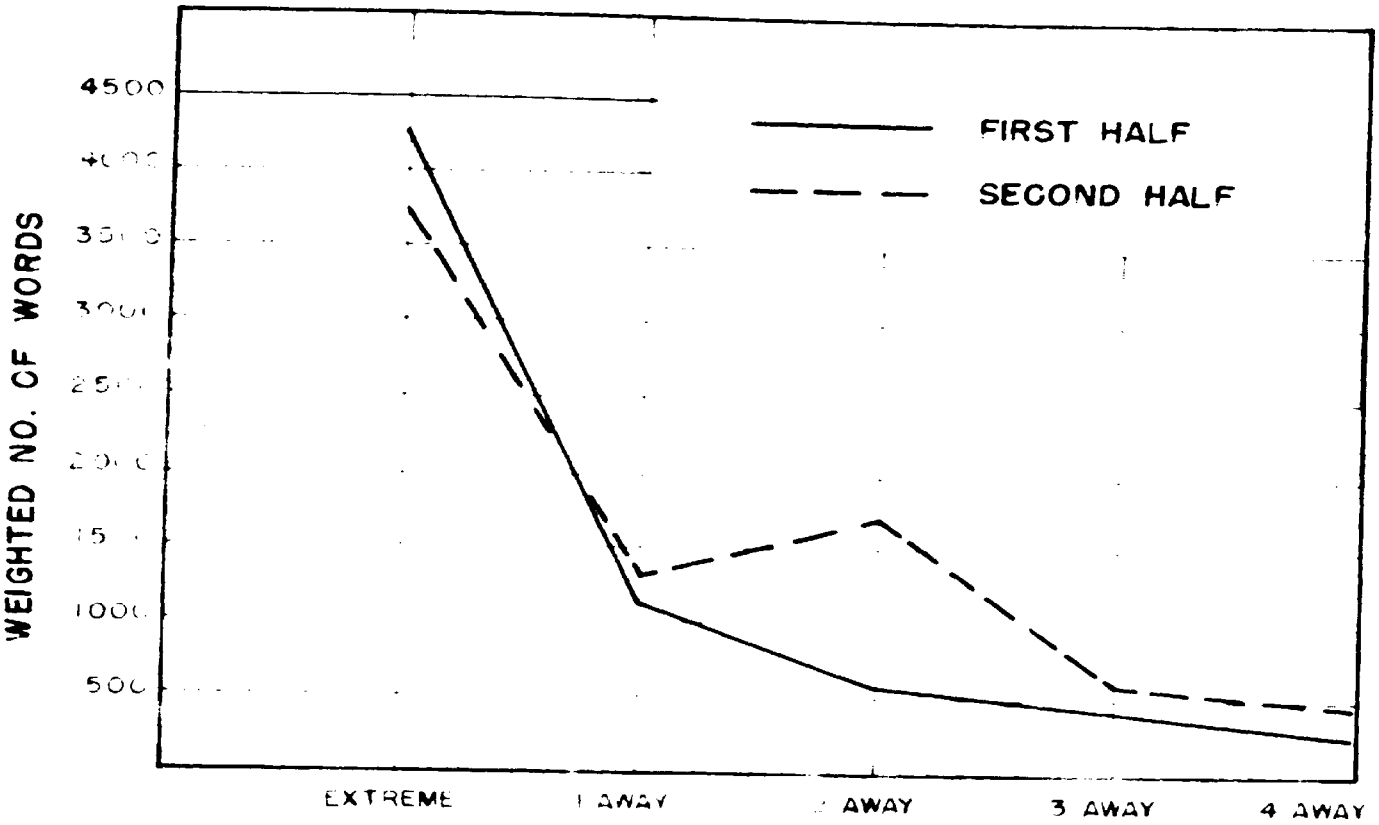

FIG. 1 PATTERN OF COMMUNICATION WITHIN THE MAJORITY FOR THE FIRST AND SECOND HALVES OF THE DISCUSSION.

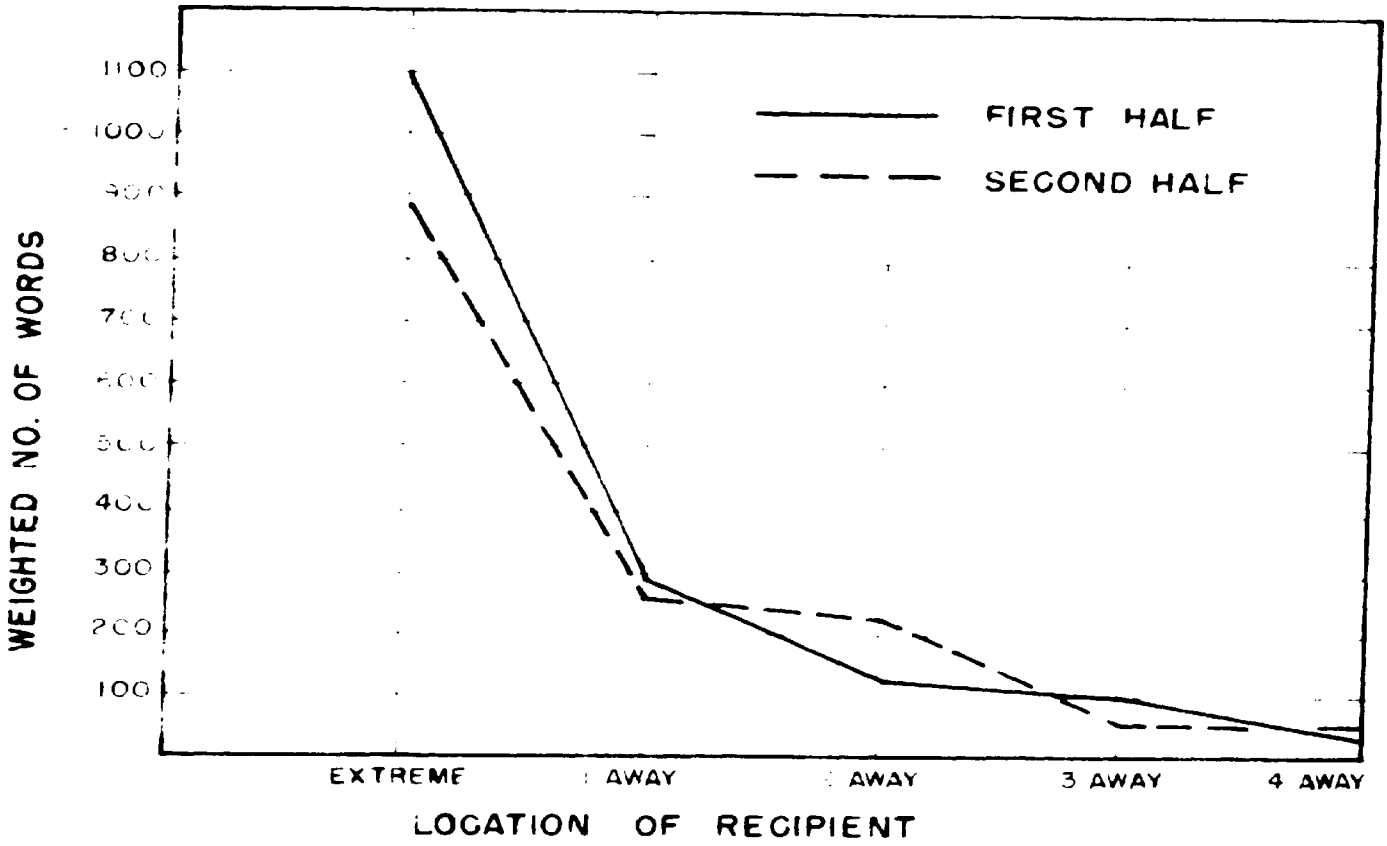

FIG. 2 PATTERN OF COMMUNICATION WITHIN THE MINORITY FOR THE FIRST AND SECOND HALVES OF THE DISCUSSION.

to the extremes. In order to make the comparisons, the mean values of the frequency curves for each condition were computed. The weighted number of words in any message was multiplied by the distance from the extreme (0, 1, 2, etc.) toward which it was directed. Low values of the index, therefore, indicate a high proportion of communication to the extremes.

Table VIII gives these indices for the communication within the majority for the first and second halves of the discussion. The data for the minority were too unreliable to test any differences between conditions or over time.

TABLE VIII

Mean Communication Indices for the Majority on the Important Issue; First Half and Second Half of the Discussion

	Homogeneous		Heterogeneous	
	First Half	Second Half	First Half	Second Half
Hi-Pressure	0.349	1.091	1.085	1.343
Lo-Pressure	0.453	0.954	0.985	0.879

The indices for the heterogeneous conditions indicate that, from the outset, communication was less extreme than in the homogeneous conditions ($p = .1$ by t), and continued to be nonextreme over time. This is what we would predict since before the discussion began, there was a basis for subgroup formation and also little dependence upon the group as a whole. The situation the subjects found themselves in did not change over time. Therefore, communication continued as nonextreme. In the homogeneous conditions communication was extreme at the outset and became less extreme over time ($p = .05$ by t). The greater amount

of communication to extremes at the outset is due both to strong pressures toward uniformity existing in the homogeneous conditions and a lack of a basis for group subdivision. During the discussion there were few changes in opinion. Therefore, since the communication directed at extremes had little effect, there was a tendency to reject those deviates who did not change, thereby achieving uniformity by redefining the group boundary. Over time, therefore, subjects communicated less to extremes.

Figure 3 indicates the direction of communication curves for the majority on the important issue. Since we wished to compare our results with those of Festinger and Thibaut, the pattern of communication in that experiment is also indicated. The curves for the latter indicate that subgroup formation occurred only in the heterogeneous conditions, and then only after some time had elapsed. Since in that experiment there was no dependence upon experts in the heterogeneous conditions, pressures toward uniformity did arise. Only after differences of opinion became clear was there a tendency to reject extremes. In the present experiment, at the outset, there were some pressures toward uniformity which were obscured by the pressures to agree with experts. Therefore, redefinition of the group boundary began immediately. In the homogeneous conditions, in the Festinger and Thibaut experiment, a large number of changes of opinion occurred. Influence directed at extremes was effective and, therefore, continued to extremes over time.

Changes that took place as a result of the discussion

We studied the effects of the influence process by analyzing the changes of opinion and choice of issue that occurred during the discussion.

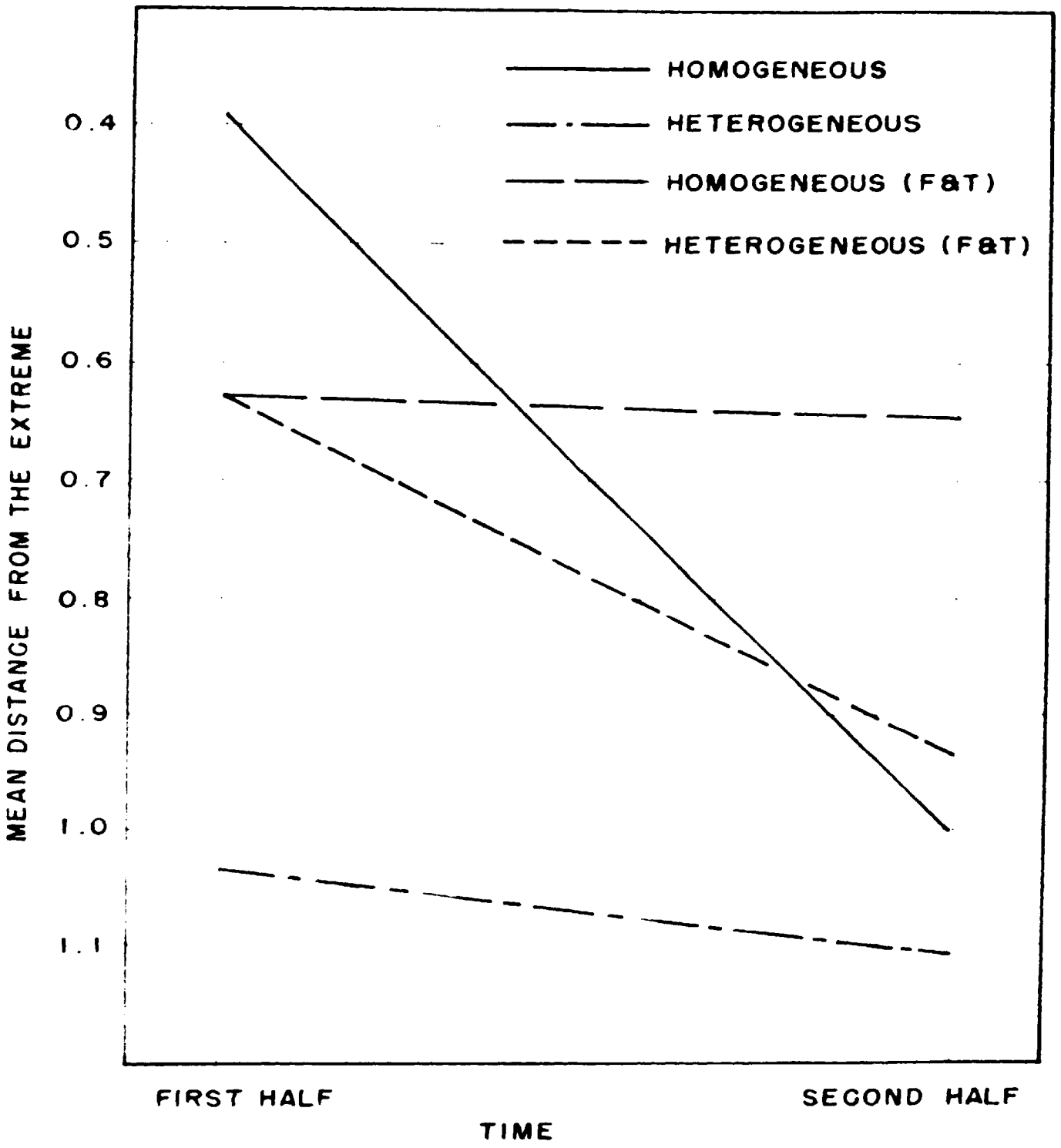

FIG 3 PATTERN OF COMMUNICATION OVER TIME WITHIN THE MAJORITY AND IN THE FESTINGER AND THIBAUT EXPERIMENT.

Since in the high pressure conditions greater dependency was engendered, we would expect more change to occur in these conditions. Table IX indicates the percentages of subjects changing in the four experimental conditions.

TABLE IX

Percentage of Changers
During the Discussion

		Homogeneous	Heterogeneous
Hi-Pressure	Opinion	22.8	18.8
	Choice of issue	3.3	4.0
Lo-Pressure	Opinion	11.7	14.4
	Choice of issue	4.9	2.1

From the table we see that only a small percentage of subjects changed their opinions and even fewer changed their choice of issue. It would seem, therefore, that there was a considerable amount of emotional involvement in the choices that were made resulting in resistance to change. However, the table indicates that the percentage of changers was greater in the high pressure conditions than in the low ($p = .001$ by Chi-square). In the Hom-hi condition, the changes resulted from subjects being dependent upon the group as a whole, and in the Het-hi condition, from dependency upon experts.

In analyzing the content of the communication, we inferred that the subjects in the minority were more dependent than were those in the majority. We would therefore expect more changers in the minority than in the majority. Table IXa presents the change data from Table

IX for the majority and the minority.

TABLE IXa

Percentage of Changers During the Discussion, Choice of Issue and Opinion on the Important Issue

		Homogeneous		Heterogeneous	
		Majority	Minority	Majority	Minority
Hi-Pressure	Opinion	25.5	18.5	21.0	11.1
	Choice of Issue	1.8	7.4	3.2	3.7
Lo-Pressure	Opinion	16.7	3.2	12.5	19.4
	Choice of Issue	1.7	12.9	3.6	0.0

From Table IX we saw that the subjects were more resistant to changing their choice of which issue was more important than they were to changing opinions on that issue. Table IXa indicates, however, that in the homogeneous conditions, where there were greater pressures toward uniformity, there was a somewhat greater tendency for those in the minority to change their choice of issue than in the heterogeneous conditions where such pressures were less ($p = .15$ by Chi-square). Table IV indicated that there was no difference in the amount of issue influence attempted by the majority on the minority in the homogeneous conditions as compared to the heterogeneous conditions. Therefore, the greater tendency for the minority in the homogeneous conditions to change their choice of issue may be interpreted as a result of a greater readiness to change in response to influence from the group. This was due to the existence of strong pressures toward uniformity with respect to the group as a whole. Table IV also indicated that there was somewhat less issue influence attempted by the minority in the heterogeneous conditions

than in the homogeneous conditions. The change data indicates that they were also less willing to change issues. This evidence leads us further in the direction of assuming a lack of strong pressures toward uniformity in the heterogeneous conditions. This, we hypothesize, is due both to the "expert effect" and the greater possibility for subgroup formation.

We also see from Table IXa that in the homogeneous conditions the minority changed more with respect to issue choice than did the majority ($p = .05$ by Chi-square). This is consistent with the theory that the minority was more in need of support on the choice of the more important issue. The table indicates, however, that the majority changed opinions more often than did the minority in the homogeneous conditions ($p = .05$ by Chi-square). If there was less resistance to opinion change, we should expect that the minority should change at least as much, if not more, than did the majority. The fact that this is not the case is difficult to explain. However, as we shall see later, the changes in opinion that do occur in the Hom-hi minority, where the pressures toward uniformity are greatest, are in the direction of uniformity more so than the changes in the Hom-hi majority.

If change was a result of influence, we should expect those who changed as a result of influence to have received a greater number of messages. Table X presents the mean number of opinion influence notes received by the opinion changers and by those who did not change their opinion during the discussion.

The data show that the changers in the high pressure conditions received more opinion influence notes than did the non-changers ($p = .02$ by Chi-square). There is no difference, however, in the low

pressure conditions. We may infer from this that the changes in the high pressure conditions occurred as a result of a "group effect," that is, due to greater dependency, influence was more successful here than it was in the low pressure conditions.

TABLE X

Mean Number of Opinion Influence Notes Received by Overt Opinion Changers and Non-Overt Opinion Changers

	Homogeneous		Heterogeneous	
	Changers	Non-Changers	Changers	Non-Changers
Hi-Pressure	3.96	2.43	4.00	2.48
Lo-Pressure	2.83	3.04	3.00	2.82

Pressures toward uniformity generate forces which tend to reduce discrepancies in opinion. These forces acting upon the group members should, therefore, increase communication to extremes as well as the readiness of extremes to change in response to influence from the group. We saw, in analyzing the direction of communication, that at the outset communication was more extreme in the homogeneous conditions than in the heterogeneous conditions. This was one indication that the above forces were operating. Table XI indicates the average deviation of opinions of those who changed their opinion on the important issue and of those who did not.

TABLE XI

Average Deviation Scores on the Important Issue for Overt Changers and Non-Overt Changers

	Homogeneous		Heterogeneous	
	Changers	Non-Changers	Changers	Non-Changers
Hi-Pressure	2.49	1.83	2.09	1.87
Lo-Pressure	1.60	1.79	1.98	1.87

We find in the table that only in the Hom-hi condition were the changers more deviate than the non-changers ($p = .01$ by Chi-square). Since it is the deviate whose changing toward the group will achieve greater uniformity, where pressures toward uniformity exist, forces to change toward the group will be on him. Only in the Hom-hi condition were these forces great enough to change deviates. We would expect this relationship to hold, to some extent at least, in the Hom-lo condition, since fairly strong pressures toward uniformity were operating. Since the figure for the Hom-lo changers is based on only 10 cases, the most plausible explanation in the light of our theory would seem to be that by chance the scores were lower for the changers than they should have been. There was no difference in the heterogeneous conditions between deviation scores for changers and non-changers. In the heterogeneous conditions, since subjects were dependent upon experts, forces arose to change opinions in the direction of those of the experts. These forces acted equally upon both deviates and agreers. Consequently, the amount of change tended to be equal for both.

To sum up the effects of influence, Table XII gives the indices of change toward uniformity for the majority and the minority in the four conditions. These indices were arrived at by dividing the standard deviation of opinions on the important issue at the beginning by the standard deviation at the end of the discussion. Thus an index greater than 1.00 indicates movement toward uniformity, whereas an index which is less than 1.00 indicates movement away from uniformity. The figures in Table XI indicated who changed (deviates or agreers). Table XII indicates whether or not these changes were in the direction of the group.

TABLE XII

Indices* of Change Toward Uniformity of Opinion on the Important Issue During the Discussion

	Homogeneous		Heterogeneous	
	Majority	Minority	Majority	Minority
Hi-Pressure	1.21	1.47	1.09	0.86
Lo-Pressure	0.94	1.00	1.06	1.13

*The standard deviation of opinion at the beginning divided by the standard deviation at the end.

The only index which is significantly different from 1.00 is the one for the Hom-hi minority ($p = .05$ by t), and, since the index is greater than 1.00, movement toward uniformity is demonstrated. This evidence fits our theory that the pressures toward uniformity were greatest in the Hom-hi minority. Therefore, when changes occurred, they were invariably in the direction of the group standard. For the Hom-hi majority, the index is not significantly greater than 1.00, but the tendency is in the predicted direction. Although we saw that there were fewer changes in the Hom-hi minority than in the majority, the changes in the minority were in response to greater pressures toward uniformity. None of the other indices approach significance. We may infer from these data that changes in the other conditions were not a result of strong pressures toward uniformity. The anslysis of the content and direction of communication indicated that pressures toward uniformity arose in the Hom-lo condition. However, these pressures were not great enough to effect changes toward uniformity. In the heterogeneous conditions pressures to agree with experts arose.

Therefore, there was no systematic change toward the group. In the Hom-hi condition notes were reacted to in terms of the recipient's discrepancy from the group, whereas in the heterogeneous conditions notes were reacted to regardless of discrepancy since the recipient thought that possibly an expert had written it.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The purpose of the experiment and the manipulations

We attempted to determine whether or not previous findings concerning the effects of pressures toward uniformity could be generalized to a situation where two dimensions of disagreement existed in a group.

The experimental manipulations consisted of creating a laboratory setting in which two dimensions of disagreement existed in a group under varying degrees of pressures toward uniformity. The perception of the group's composition was also varied along a dimension of homogeneity-heterogeneity.

Evidence has been presented suggesting that these manipulations were successful. In addition, in the heterogeneous conditions, there was a tendency to perceive some members of the group as experts.

Conclusions

The analysis of the data led to the following conclusions:

1. The division of the groups into a majority and a minority had a crucial effect on the relative need for support by the members of these subgroups. The minority members needed more support from others in the total group and from others in their own subgroup than did those in the majority. This was indicated by the following data:

In all conditions,

a) there was a greater amount of issue influence by those in the minority than by those in the majority;

b) there was a greater amount of opinion influence exerted per possible recipient within the minority than within the majority;

c) minority members changed their choice of issue more often than did majority members.

2. Greater pressures toward uniformity arose in the homogeneous than in the heterogeneous condition. These pressures were greater in the Hom-hi than in the Hom-lo groups. This was indicated by the following data:

a) There was a greater amount of communication attempting to achieve uniformity of the group as a whole (issue influence) in the homogeneous groups. The amount of this communication tended to be greater in the Hom-hi than in the Hom-lo condition.

b) A greater amount of opinion influence on the important issue as compared to the less important issue occurred in the homogeneous minorities. The proportion tended to be greater for the Hom-hi than for the Hom-lo minority.

c) Change toward uniformity occurred only in the Hom-hi condition, the minority members changing most in the direction of the group.

3. Pressures to agree with experts arose in the heterogeneous groups. These pressures tended to be greater in the Het-hi than in the Het-lo condition. This was indicated by the following data:

a) No change toward uniformity occurred in the heterogeneous conditions.

b) Deviates as well as agreers changed in response to opinion influence. The amount of this change in response to influence from experts was greater in the Het-hi than in the Het-lo condition.

4. The tendency toward group subdivision was greater in the heterogeneous than in the homogeneous conditions. This was indicated by the following data:

a) There was less communication attempting to achieve uniformity of the group as a whole (issue influence) initiated by subjects in the heterogeneous minorities than by those in the homogeneous minorities.

b) At the outset there was less communication to extremes within the heterogeneous than within the homogeneous majorities.

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APPENDIX

QUESTIONNAIRE

Name _____ Identification Letter _____

Date _____ Time _____

You will remember that in setting up this experiment we were anxious to form certain types of groups. We want your help in deciding how successful we were in setting up such groups. Please answer the following questions honestly and sincerely:

1. Check one or two of the alternatives below to indicate how the other members of the group compared with you in background and experience needed to make the judgments that were made?

_____ a. All were about equal to me.

_____ b. Some were better qualified than I.

_____ c. Some were less qualified than I.

2. At the outset, how much did you find yourself in disagreement with the rest of the group on the importance of the issue (curriculum planning or allocation of funds) you had chosen? (circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
extremely considerably somewhat a little None at all

3. After you had selected the issue which was more important to you, how much did you want those who considered the other issue more important to discuss the one you had chosen? (circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
very much a lot somewhat a little none at all

4. To what degree did those who had selected the other issue try to get you to discuss the one they had chosen? (circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
very much a lot somewhat a little not at all

5. How much did you find yourself in disagreement with the opinions of the others who had chosen to discuss the same issue you had chosen?(circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
extremely considerably somewhat a little none at all

6. After you had indicated your opinion on the issue you had chosen, how much did you want those who had different opinions to change to an opinion which was closer to your own? (circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
very much a lot somewhat a little I didn't care

7. To what extent did the others who had different opinions on the issue you had chosen try to get you to change your opinion? (circle one)

1 _____ 2 _____ 3 _____ 4 _____ 5
very much a lot somewhat a little not at all