EFFECTS OF OPINION STRENGTH AND PEER GROUP SUPPORT ON DYADIC INTERACTION

THE EFFECTS OF OPINION STRENGTH AND PEER GROUP SUPPORT UPON DISCUSSION AND OPINION CHANGE IN TWO-PERSON GROUPS

BY

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SCOPE AND CONTENTS:

An experiment involving 120 subjects was conducted to determine the effects of peer group support and opinion strength on opinion change following group discussion, and on the course of the discussion itself.

The results indicate that subjects with strong opinions tend to initiate discussion, speak less against their own opinion, feel less pressure to change their opinion and to change their opinion less when they did change.

Subjects who had less peer group support than their partner, tend to speak more against their opinion and change their opinion more than did subjects who had more peer group support than their partner or an equal amount.

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CHAPTER ONE

INTRODUCTION

The experiment reported in this thesis is concerned with opinion change shown by people interacting within a group.

Within any group, whether there is discussion or not, norms internal to the group are created toward which the opinions of the members of that group move. In this study, an external norm, the amount of peer group support of an opinion, is varied and its effects are observed in relation to the internal group norm on two different classes of subjects; those who initially held a strong opinion and those who initially held a weak opinion.

The present study is the second in an exploratory series conducted in the Group Dynamics Laboratory at McMaster University and focused on the investigation of the effects of peer group support on opinion change following discussion, and on how this variable affects certain aspects of the discussion itself. The results of the first study (Norrison, 1965) suggest that amount of peer group support does affect certain aspects of the dynamics of discussion. though not opinion change. Other experiments, not necessarily concerned with the dynamics of interaction, have found opinion change to vary with the amount of peer group support. Norrison attributed the lack of differential opinion change associated with the varied peer group support conditions in his study to the fact that all his subjects had originally expressed very strong opinions. Strong opinions have been shown to be well anchored and least subject to change in previous studies. If this interpretation is correct, then the pairing of a weakly opinionated subject with a subject who holds a strong opinion should be related to - differential amounts of opinion change in the various peer group support conditions. This is one of the major considerations of the present

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experiment.

Before outlining the study itself, a review of previous research relevant to the present experiment will be presented in the next chapter.

CHAPTER TO

HISTORICAL REVIEW

The literature concerned with persuasion is voluminous and diverse, and therefore this review identifies and briefly describes only those studies which are directly related to the present experiment.

Previous studies have identified many variables which are related to the extent to which group influence affects an individual's judgement. Among these variables are those which are brought into the situation by the subject himself such as: personality factors, sex or need for approval. A second group of variables that affect the extent of group influence are those related to the object under judgement. These include such factors as: ambiguity of object, its social value, degree of confidence held in it, and the strength of opinion held by an individual about it. A final group of variables may be classified as those that are controlled by the group situation. Included here are the size of the group, the purpose of the group, the cohesiveness of the group, the number within the group holding a contrary opinion, and the number outside the group (a reference group) holding a contrary opinion. The effects of most of these variables on opinion change have been amply reviewed by Hare (1962) as well as Altman, Pendleton and Terauds (1960). However, little is known about the effects of these variables on the dynamics of opinion change within the group situation. The question under study here is not only how certain variables are related to opinion change, but how they affect the verbal interaction which results, finally, in opinion change.

In the present experiment, one object variable, strength of opinion toward the object and one group situation variable, the size of an external norm, that is, the amount of peer group support, are varied together in a group situation.

The general plan of this review of the literature is as follows: First, it will be advantageous to review the effects of group interaction itself. This part of the review is intended to demonstrate how an internal norm arises from group interaction. The next part of the review will look at those experiments which have varied one of the variables under study, an external norm, the amount of peer group support. Next, we will look at those few studies which have observed the effect of an external norm on the internal norm which arises from group interaction. Following this, it will be necessary to review those studies which have been concerned with the relationship between the amount of disparity between opposing opinions and subsequent opinion change. Finally, we will look at the very few studies that have been done on the second variable under study here, strength of opinion.

Creation of an internal norm through group interaction

The present experiment involves the effects of variables operating in a group discussion situation. A look at some of the earlier experiments on opinion change after discussion will demonstrate that knowledge of how others within a group behave is a sufficient force to form an internal group norm or standard upon which members converge.

Jenness (1932) was the first to investigate the effects of group discussion on opinion change. He had subjects estimate the number of beans in a jar, first alone and then after group discussion. The discussion was held in groups of three or four subjects who differed in their estimates. He found that opinions tended to converge in groups of three more than in groups of four. This suggests that the amount of interaction is a significant variable in the establishment of group agreement, since the amount of opportunity to interact per member is greater in a three-person group than in a four-person group. Jenness also found a greater change of opinion in his discussion groups than in a condition where there was no opportunity for discussion. This convergence of opinion after discussion was also observed in two person groups by Kirkpatrick (1936).

One of the more recent experimenters concerned with the effects of group discussion on opinion change was Lewin. Lewin (1958), compared the effects of group discussion followed by group decision with the effects of hearing a lecture followed by an individual decision in a group situation. He found that the group discussion condition was superior to the lecture condition us a means of changing attitudes towards foods in adults. This exploratory study by Lewin does not reveal the specific fectors responsible for the suceriority of group discussion - group decision method over the lecture - individual decision method. A study by Pelz (1958) was the first to attempt to disentangle the relative contribution of such factors as lecture versus discussion, decision versus no decision, degree of public commitment and degree of consensus in the group. Pelz concluded that neither discussion nor public commitment was important but that the act of making a decision and the degree of perceived consensus in the group, in combination were sufficient to account for the results in Lewin's study. Pennington. Haravey and Bass (1958) questioned Pelz's interpretation. They found that opinion change was greater when there was discussion than when no discussion took place. This is in agreement with Jenness's (1932) results. Decision making was also found to be effective in causing opinion change, but this factor did not have as large an effect as discussion. In interpreting the conflicting findings of the studies of Pelz

and Pennington et al., it should be pointed out that in the Pelz study, the subjects were told to make individual decisions in a group atmosphere, whereas a group consensus was asked for in the Pennington study. Perhaps group discussion is more effective in creating convergence on an internal norm only when a consensus is asked for but not when members of a group are asked to arrive at individual decisions.

So far we may conclude that group discussion, especially when a consensus is asked for, will lead to convergence of opinions. However, other experiments suggest discussion is not needed at all, just the mere presence of another holding a divergent opinion.

A comparison between a co-working group, a condition in which individuals work in one another's presence but without any explicit communication, and the performance of individuals working alone was reported by F. H. Allport (1924). He had subjects judge the degree of pleasantness of odours in a series and the heaviness of a series of weights. He found that subjects made fewer extreme judgements, that is, judgements towards the ends of a scale, in the "together" condition than they did when working alone. This suggests that the desire to agree, to establish a norm or standard exists even in the co-working group.

Working with the modification of children's food preferences, Dunker (1938) found that if a child saw another child choose a certain piece of food from an assortment, there was an increased chance that the second child would make the same choice. Another example of convergence of opinion can be found in the classic experiments of Sherif. Sherif (1937) using the autokinetic

effect and having subjects voice their judgements found convergence of judgements by individuals placed in a two-person group.

These last three experiments demonstrated convergence toward an internal group norm in dyadic groups where no discussion had taken place. Other experimenters have observed the convergence of a subject toward the viewpoint expressed by more than one other individual in a non-discussion situation.

Asch (1951) had subjects judge the length of a line after hearing the judgements of 6 to 8 confederates who gave an obviously wrong answer on certain critical trials. Asch found that a subject shifted his opinion to agree with that opinion unanimously expressed by confederates on 37% of the critical trials, though large individual differences were found. Hardy (1957) found similar results on views of divorce using the same procedure as Asch.

The Asch technique is highly uneconomical as there is only one subject in each group. Crutchfield (1955) has devised a more practical procedure where it is possible to collect data from a number of subjects simultaneously. Unlike the Asch set-up, the subjects are not face-to-face, but in individual cubicles in which a switchboard informs then how the others within the group supposedly judged a stimulus. On critical trials, all subjects are made to think that their judgement is to be made last, thus enabling the experimenter to expose all subjects to the same conformity pressure. Using this method, Crutchfield (1955) was able to create a substantial amount of yielding to a unanimous majority over various kinds of stimuli. The more ambiguous the stimulus, the more the shift was toward the false norm of the group. The results also showed large individual differences. These findings were confirmed by Coleman, Blake and Mouton (1958) who used a simulated group procedure in which each member thought he heard the unanimous opinions of four others, before

voicing his own opinion on current event topics. The Crutchfield and Coleman et al. findings are consistent with the idea that the more ambiguous the situation or stimulus, the more a subject must rely on others' opinions for a judgement of correctness.

It is evident from the preceding review that within any group, whether there is discussion or not, an internal norm or group standard is created toward which members of that group move. This movement has been labelled group locomotion by Festinger (1950). The foregoing survey shows that group locomotion has been observed in such extreme cases as when there was no instruction to reach a consensus, when there was no opportunity to argue, and even when the members were making judgements on a very unambiguous task.

None of the studies above have had any particular concern with why this movement occurs. However, there is some information evailable on these points. A number of studies (mainly done under Festinger) have shown that a person does not like to have others disagree with him. Furthermore, he will try to persuade others that his position is correct.

Schacter's (1951) emperiment was the first to show this and was one of the first to record the pressures related to this movement within the group situation. In contrast to previous studies, the reactions of members to each other were the main dependent variables. This study took into account both the amount and direction of the communication in the group, variables which give us insight into how pressures leading to conformity are exerted. Schacter used groups of five to seven individuals gathered together to form a new club. All clubs, no matter what their original purpose, were asked to discuss the case of Johnny Rocco, a juvenile delinquent. Within each group Schacter employed three confederates; a deviate who took an extreme opinion opposed to tho

majority throughout the discussion, a mode who took the position of the modal number of members, and a slider who started out as a deviate, but who gradually moved toward the majority point of view as the discussion progressed. Schacter measured the amount of communication directed at each confederate as the discussion progressed. He found that as the discussion proceeded, there was an increase in the amount of communication directed toward the deviate. There was no increase in the amount directed to the mode and there was a decrease in the amount directed to the slider as he moved toward the modal position. Two sociometric measures obtained after discussion showed that the deviate was rejected by all subjects. There was no evidence of rejection of either the mode or the slider. Further studies reported by Festinger and Thibaut (1951) and Festinger, Gerard, Hymovitch, Kelley and Raven (1952) also have found that deviates receive more communication and thus have greater pressure to change directed towards them than is directed to those who hold a modal opinion.

Schacter, because he used confederates, could not obtain a measure of opinion change. To remedy this problem, Festinger et al. (1952) used real subjects. The deviates and conformers were created by using false distributions of opinions. Written messages, rather than oral communications, were used in order to control the communication between subjects. This allowed the experimenters to intercept the messages and substitute their own. Using this procedure they found, as in Schacter's study, that more communication was directed toward the deviate. Furthermore, deviates changed their opinions more readily than others in the direction of the majority opinion. Deviates who did change also communicated less than conformers or deviates who didn't change. Similar findings have also been reported by Raven (1959).

It is clear from the research outlined above that a person does not

like to have others disagree with him. He will try to persuade others that his position is correct. One reason why this happens is offered by Festinger (1950). When an individual enters a group and discusses a topic on which there is no empirical referent, he is dependent upon agreement within the total group for feeling his opinion is correct. Furthermore, the fact that no one likes to be exposed to an opposing opinion manifests itself in the finding that persistent deviates are rejected from the group.

The effects of knowledge of an external norm on an individual's opinion.

Just as the preceding section has provided us with the observation that knowledge of an internal norm, how others within a group behave, is a sufficient force to create conformity, the following experiments are intended to show first, that the mere knowledge of an external norm is a sufficient force to create conformity and second, that the size of a reference group can effect the degree of conformity.

Generally, in these experiments, an individual is merely informed how others feel about a topic. Moore (1921) performed one of the first experiments of this type. He was mainly concorned with which type of reference group, peer group wajority or expert opinion, exerted greater influence in creating opinion change on various topics. He had subjects make individual judgements on expressions related to speech, morals and music. Later he re-administered the same questionnaire, but this time including a statement of the preferences of a majority of peers. After a two-day interval, the same questionnaires were given again but with the preferred choices of an expert in each field. While both cases showed shifts of opinion in the direction of the reference group, more change was observed under the peer group condition, than under the

expert condition. These results were later confirmed by Marple (1933) in a design which employed a control group that received no reference group information. Wheeler and Jordon (1929), concerned only with the effect of peer group support on opinion change, obtained results in line with the above studies. They also reported that while most people tended to change in the direction of the majority, some people moved away from the majority. Neither Moore nor Marple had reported this finding.

In a more recent experiment, Wiener, Carpenter and Carpenter (1956) obtained the preference of college students for two names associated with each of ten ambiguous designs presented in a mineographed booklet. Later, the experimenters returned the original booklet upon which they had written arbitrary percentages said to represent those in the class choosing each alternative. On five critical designs, the percentages informed the subject that the majority of the class disagreed with his choice; on the other five designs, that he was in agreement with the majority. The subjects were then asked to indicate their choices again. The experimenters found significant conformity. as measured by change in the direction of the external norm. Similar results with high school students have been reported by King (1959) who used a check mark procedure to indicate where each of three reference groups stood (parents, teachers or peers) on 45 questions of a heterogeneous nature ranked on a seven-point scale. Of these 45 items, 38 were designated critical and were check-marked at the extreme ends of the scale. Using the sum of a subject's changes on the 38 critical issues, King found that the subjects were very susceptible to majority influence over different content areas. irrespective of the nature of the reference group.

Some effects of the composition of the majority have been reported

however. Walker and Heyns (1962) found that when a norm was attributed to a group that was very close (girls in your own sorority) there was much more opinion change than when a norm was attributed to a group of a more global nature (all other sororities or most other Michigan students). It should be noted that all subjects in this experiment were members of all three reference groups. The experiment seems to indicate that the more closely related a subject is to a reference group, the more effect knowledge of the group norm will have.

In general, from the experiments in this section, it is clear that knowledge of an external norm is sufficient to create conformity. Now let us turn to the few studies which have varied the size of the reference group and in which the effects on opinion change have been observed. There are only four studies which fall into this category, three in which no relationship between the size of the majority and yielding was found and one in which the results were positive.

Let us first look at the studies in which no relationship was found. Wiener, Carpenter and Carpenter (1957) using the same procedure as in their 1956 experiment, described above, varied the amount of divergence, i.e. the size of the majority holding a given opinion on the five critical designs used. They also varied the ambiguity of the design (the number of ways a design might be interpreted). Although there was an overall tendency for all subjects to conform to some extent, results showed/evidence of a relationship between conformity and the two stimulus variables, though the range of conformity scores indicated large individual differences.

Pobbins (1961), using Likert opinion scale ratings of a movie on delinquents, also failed to find an association between the size of the majority and amount of conformity. One week after seeing the movie and indicating their

choice of treatment for the delinquents, subjects were given information of where the majority of their peers stood. Half the subjects were informed that 86% disagreed with them (high majority condition), the other half, that 56% disagreed with them (low majority condition). Robbins found that the degree to which subjects were immediately influenced by social pressure was the same whether the amount of external egreement was large or small. The third study (Norrison, 1965) in which similar negative results were found will be reviewed in the next section.

In only one experiment has the size of the external majority been found to be a significant variable. Wiener (1958), using the same situation as previously used by Wiener et al. (1956, 1957), found more change in his high disagreement group (91% vs 9%) then in his low disagreement group (53% vs 47%). This finding is more consistent with other experiments which have varied the size of the majority of members <u>present</u> in a group. [Luchins and Luchins, (1955), Kelley and Woodruff (1956), and Asch (1952, 1955)]. These studies have been summarized in Hare (1962) and Graham (1962). In general, these experiments have found that the size of the majority is related directly to the effect of influence on a subject.

Most of the experiments reviewed above have used peers as the normative influence, although a few have used expert opinion. These experiments show that knowledge of an external norm can be a sufficient force to create conformity, though some sources of the norm exert more influence than others. Only one experiment, Wiener (1958) has been able to demonstrate that there is a direct relation between the size of the majority supporting the external norm and the extent to which a subject is influenced.

The effects of knowledge of an external norm on the formation of an internal norm.

Considered as a whole, the previous experiments have shown that knowledge of how others behave (a) within a group (internal norm) and (b) as a reference group (an external norm) can effect opinion change. The next series of experiments is interded to bring out what little is known about the interaction of these two factors.

Gerard (1954) established a group norm and observed the effects of this norm on an internal group norm. To establish the first norm he had subjects discuss a topic and reach some consensus. This tended to anchor the opinion within the group. The degree of anchoring was controlled by varying the attractiveness enong cembers and the amount of opinion agreement (distance) within the group. Attractiveness was controlled by telling the members of a group that they would find each other congenial (high attraction) or not congenial (low attraction). One week later, each subject returned individually to the laboratory at which time his opinion was challenged by a paid participant in a discussion. The first norm, established as an internal group norm, now served as an external norm, a reference point in the later dyadic discussion. Gerard found that those subjects who were in agreement with the first group made more influence attempts on the paid participant than those who were in hild or strong disagreement with the first norm. He also found that regardless of the degree of agreement, subjects from the high attraction conditions changed less than those from the low attraction conditions. This experiment seens to indicate that when a subject has support from an external norm (here a subject in the agreement condition) he will try to influence a deviate more than if he had weak or no support from the external norm (mild or strong disagreement conditions).

Other studies have supplied an external norm by informing the subject that he or his partner is correct or in agreement with an outside majority on a given task. These experiments then test the influence of this external norm on the formation of an internal norm.

Hausner (1954a), using this procedure, first had subjects estimate the lengths of lines varying in length from 8 in. to 18.5 in. alone. In this alone situation, he informed half the subjects they were right (R) on 82% of the trials and half they were wrong (NR) on 82% of the trials. He then selected pairs of subjects so that their alone judgements overlapped minimally. He found that subjects who were made to doubt their judgements (NR group) had a greater tendency to be influenced by their partner's judgement in the group situation. The subjects who had been informed that their judgements were correct in the alone condition (E group) tended to shift away from those of their partners. Hausner (1954b) next used confederates in the pair situation. He had confederates demonstrate failure in a time judgement task in front of 11 subjects and successful judgements for 17 subjects. Hausner then asked the subject and confederate to do the task together. Hausner found that subjects who had previously observed a successful partner converged significantly more towards their partner than those who had previously observed an unsuccessful partner. In a later experiment, Mausner and Bloch (1957) varied not only the individual's past history of success, but also the partner's history of success. This time the perceptual judgement was the identification of the number of paratroopers flashed on a screen. The results were not as clear as hoped for. They found, as predicted from the previous experiments, that both variables created a shift in judgement when both subjects were informed one was correct and the other incorrect. But, when both partners were informed that both were right

or both wrong, it was not possible to predict subsequent behavior.

Mausner's studies indicate that prior knowledge of an external norm, that is success of the subject himself or of his partner, is a substantial force interacting on the creation of an internal group norm. Furthermore, it has been impossible to confirm any predictions about the interaction between subjects who have been informed that both are correct or both wrong.

Prior knowledge of support will not always create opinion change in the direction shown in the above experiments. Anderson and McGuire (1965), working with truisms, that is very strong and widely held opinions, gave subjects reassurance of their beliefs by presenting them with feedback that their peers were in complete agreement with them on four issues, low agreement on another four, and no feedback on the remaining four. Anderson and McGuire then confronted the subjects with written communications expressing opposite points of view to the truisms. They found more opinion change with the highly supported truisms than with the truisms that were not supported. These results are consistent with the general notion of innoculation theory which states that it is easier to change an overprotected belief (truism) by pre-exposing the subject to reassuring material than to material that will stimulate defence of his point of view.

Cerard's study shows some of the dynamics of the interaction of an external norm on the formation of an internal norm. But, because Gerard used confederates, he was not able to obtain a measure of opinion change. Mausner's experiments likewise do not allow us to see the relationship between behavior observed during the interaction of these norms and resultant opinion change since he only obtained post-interaction opinion change measures. Normson (1965) carried out the first experiment concerned with both. After informing a pair

of subjects that each of them had a certain amount of peer group support for their opinion previously obtained on an issue (the external norm), Norrison had them discuss this issue. The discussion was monitored and in addition a post discussion measure of opinion was taken. This procedure allowed the experimenter to see the dynamics of the pressures prising from the interaction of the external norm on the creation of the internal norm as well as the resultant opinion change. In all discussion groups, both members had initially expressed very strong opposing opinions on a 7-point scale. Horrison used three combinations of peer group support. In one, both members were informed that they had substantial, but equal support (P-P groups); in another, that they had little, but equal support (p-p groups); and in the third, that one had a large amount and the other a very small amount of peer group support (P-p groups). Using a procedure developed in the previous work of Carment (1961) and Carment, Schwartz and Hiles (1963, 1964), the discussion was monitored in terms of the total amount spoken per subject, the total amount spoken per group, and the proportion of time each subject spent speaking positively (for his original point of view), negatively (against his original point of view), and neutrally (off topic). A temporal measure of opinion change was reflected in an increase in positive statements or a decrease in negative statements. Using these measures. Norrison found that subjects in groups where there was unequal support (P-p) spoke more, wade more positive, and fever mentral statements than subjects in groups with equal support (P-P and p-p). In addition, the most neutral and the fewest positive statements were emitted in groups where subjects each had a substantial amount of support (P-P). However, the post discussion measures showed no differential opinion change nor rejection of partner among the peer group support conditions. This makes it rather

difficult to say exactly what Norrison's results mean, as the temporal measures show that opinions were changing differentially, but the post discussion measures showed no differential opinion change. Norrison suggests that one reason he did not find post discussion change was that both his subjects initially held very strong opinions, and the discrepancy, or distance between their opinions was too large to allow final opinion change. A review of the experiments which led to this suggestion makes up the next section.

The effect of the distance between opinions on opinion change.

A number of studies have concentrated on the relationship between the extent of initial disagreement between an individual's opinion and another opinion. This variable has been referred to as the distance variable. Cne of the classical studies in this area was done by Hovland and Pritzker (1957). After asking which reference group was the authority group for each of 10 different issues for each individual subject, the experimenters obtained an individual's opinions on a 7-point scale ranging from strongly agree to strongly disagree. [This scale is similar to the one used by Norrison (1965)]. Later, Hovland and Pritzker indicated where a subject's chosen reference groups stood to introduce three distances 1, 2 and 4 steps removed from a subject's original opinion. The results show that the communications advocating the most change (4 steps) evoked more change than those advocating moderate change and these in turn evoked significantly more change than those advocating the smallest amount of change. This relationship, the more change advocated, the more change brought about, has also been reported by Ewing (1942) working with propaganda material. Goldberg (1954) working with judgements of intelligence of negroes, Fisher and Lubin (1953) and later Zolman, Wolf and Fisher (1960) working with

perceptual judgements of the number of paratroopers seen in briefly exposed photographs, and more recently by Zimbardo (1960) and Scriein (1963). These last two experiments used pairs of friends who were first involved in a cooperative task to provide high cohesiveness and then were exposed to a bogus opinion on how to handle a juvenile delinquent.

Howland and Pritzker (1957), Einbardo (1960) and Corfein (1963) elso reported observing a boomerang effect at the greatest opinion distance. A boomerang effect is a movement of a subject in the direction opposite to that advocated. This effect has been noticed in other experiments [i.e. Wheeler and Jordon (1929) and Howland, Marvey and Eherif (1957)], but it is not common. An interpretation of this boomerang effect in terms of lattitudes of acceptance and rejection has been offered by Sherif and Howland (1961) but will not be dealt with here.

The studies reviewed above have shown that large distances are more effective than moderate distances in bringing about greater opinion change. However, some studies have questioned the generality of this finding. Sherif, Taub and Hovland (1958) found that a distant anchor was considerably less effective in altering opinions than anchors which were less reduce. Hovland, Harvey and Sherif (1957) in a study dealing with the issue of prohibition in the then dry state of Oklahoma, found similar results. Smaller distances between the position advocated in a communication and the position of an audience yielded greater opinion change than larger distances.

These results are clearly at odds with the results reported above. Whittaker (1963, 1965) noticing the contradictory findings, has suggested that the conflicting results might be due to different degrees of involvement in the issues employed in the experiments. Shittaker pointed out that Hovland and

Pritzker (1957) used topics that were of no great importance to the subjects, nor were they ones in which the cubjects were deeply involved, (Mashington was a greater president than Lincoln); whereas, Hovland, Harvey and Sherif (1957) had used an issue of deep involvement, (prohibition in a dry state). In order to obtain deep involvement to test his theory, Whittaker (1963, 1965) increased Hovland and Pritzker's 7-point scale to a 9-point scale by adding "agree absolutely" and "disagree absolutely". Unereas Hovland and Pritzker used a 4-step distance as their maximum discrepancy, Whittaker used an 8-step maximum.

With this greater discrepancy on more relevant topics, Whittaker was able to show that there was an optimum distance for change (4 to 5 steps) above which and below which there was less change. Furthermore, if a subject was involved in an issue, smaller discrepancies yielded the most change, but if a subject was not involved, larger discrepancies yielded the most change. Whittaker (1964) also investigated conformity as a function of distance between the opinions of subjects in a group condition. Using the autokinetic phonomenon as Sherif had done, Whittaker again found a curvilinear relationship. Very small discrepancies produced negligible changes, while moderate distance produced significantly greater change. Extremely large distances were shown to produce large negative changes (boomerang effects).

Norrison (1965) was unable to produce differential opinion change using a 6-step discrepancy. Whittaker's data (1963, 1964, 1965) suggests that this distance may have been too great to produce conformity. In fact, Norrison's 6-step discrepancy should have produced negative changes. Unfortunately, Norrison's scale did not permit the registration of these negative changes.

From these studies, we can conclude that if we want to create maximum opinion change, a discrepancy of 4 to 5 steps should be used. We can use the

optimum discrepancy suggested above by having one person who has indicated a strong position on a 7-point scale, discuss a topic with another person who has indicated a mild opinion of the opposite nature. By doing this, we introduce another variable, strength of opinion. Surprisingly little research has been done with this variable but what has been done is now reviewed.

The relation between strength of opinion and opinion change.

If you ask whether a strong or a weak opinion is most likely to change under pressure, most people will say a weak one. However, the evidence on this point is far from consistent. Birch (1945), using socially disapproved labels (communist, facist) on strongly supported social positions, found that vell-structured opinions were maintained. Eirch compared this finding with that of Sherif's (1937) where not so well-structured opinions were used. He concluded that extreme attitudes were less easily changed than mildly-structured ones. There is doubt as to whether this conclusion is justified as well-structured opinions are not necessarily extreme or strong opinions. Asch. Block and Hertzman (1938), also involved in a study of well-structured attitudes, offered an argument that was also evoked by Birch (1945) of why a strong, well-structured opinion was found to be least subject to influence in their studies. Their argument was that the factor of knowledge produced a more stable attitude and one more resistant to change; the more knowledge, the more resistance. An earlier experiment by Chen (1933) suggests that this argument may not be tenable. In a study of the influence of oral propaganda upon students' attitudes, he found no relation between the amount and accuracy of information and the opinion held. or the degree of change. Furtermore, not only does the interpretation offered by Birch (1945) and Asch et al. (1958) seen not to hold, but the experiment by

Anderson and McGuire (1965), reported previously, casts some doubt on the reproducibility of their results. Anderson and McGuire found that wellstructured beliefs could be very susceptible to pressures if strong assurance was given before the belief was challenged.

There are, however, two recent experiments which do provide evidence that weak opinions are more subject to change than strongly held opinions. Raven (1959) recorded the relation between original opinion scale position and the amount of opinion change. Using a 7-point opinion scale and a false norm at the extreme end of the scale, he found that subjects who held a strong opinion opposite to that of the presented norm did not change as much as those further in on the scale. Subjects who had very strong opinions tended to maintain their original position or move only one position toward a more moderate position (this is similar to Norrison's findings). Subjects who had held a moderate opinion tended to move toward a more mild position and to change a greater number of steps than the strongly opinionated subjects. Carment (1961) found similar results. He had subjects discuss a topic on which they had initially divergent opinions. One subject in each pair held a strong opinion, the other a very weak opinion. After discussion, opinion change was judged by two observers. Using these observer ratings, Carment reported that over twice as many weakly opinionated subjects changed their opinion in the direction of their strongly opinionated partner's position than vice versa. Carment also reported that opinion strength can affect certain aspects of the discussion itself; almost twice as many strongly opinionated subjects initiated the discussion and spoke most as compared with subjects who had a weak opinion.

The relationship between strength of opinion and degree of opinion change may not be as clear as suggested above. Katz, Sarnoff and McClintock (1956),

in a study involving attitudes toward negroes, found no relationship between the number of people changing their opinion and the original position that they had held. These findings (Katz et al.) may not really be discrepant from the previous findings of Raven (1959) and Carment (1961). In Raven's and Carment's experiments, a measure of magnitude was used, the degree of opinion change. Katz et al. used an absolute measure, either a subject did or didn't change his opinion. This suggests that what is important is not whether there is change or not, but the degree of change.

* * * * * * * * * * * * * * * *

In view of the number of findings which the above review has attempted to document, a general statement of the main points may be useful.

While it has been clearly shown that both knowledge of an internal norm and knowledge of an external norm are sufficient forces in themselves to create conformity, little is known about the interaction of an external norm on an internal norm. The few experiments that have attempted to analyze this interaction of norms have found that the more external support a subject has, the more he will try to influence a person with lesser support and the greater the influence attempts, the more successful he will be. Furthermore, there will be more opinion change and greater communication between members of a dyad when members are in an unequal support condition than when the dyad members are in an equal support condition.

While it has been generally accepted that an inverse relation exists between opinion strength and opinion change, very few studies have actually shown this. Only one study has been concerned with the effects of opinion strength on discussion. Carment (1961) found that a person holding a strong opinion will initiate a discussion more often and will speak more than a partner holding a weak opinion.

Present experiment.

As has been shown, very little is known about how knowledge of an external norm affects discussion and resultant opinion change in a face-toface group. Further, very little is known about the relationship between strength of opinion and opinion change. For these reasons, the present experiment is necessarily exploratory in nature, and is designed to answer the question of how two people, one with a strong opinion and one with a weak opinion will behave during and after discussion of a topic when they are aware of the response (fictitious) of their peers to the same topic.

CHAPTER THREE

METHOD

Subjects

The subjects were 120 male undergraduate students enrolled in an Introductory Psychology class (regular session) selected and paired on the basis of their responses to an attitude questionnaire administered two to four months before the experimental session.¹ The purpose of this questionnaire was to select pairs of subjects in which one member had indicated a strongly held opinion and the other member a mild opinion in the opposite direction on a selected topic.

In addition to being paired on the basis of appropriate strengths of opinion, the members of each dyad were matched for age (average age - 19.7 years) and university year. The greatest age discrepancy between members of a dyad was 2.0 years. Care was taken to ensure that subjects of a pair did not know one another prior to the experiment.

Design

Ninety-six of the subjects were used in the basic design which was a 2 x 4 factorial, with 12 subjects in each of the eight cells. There were two levels of opinion strength and four levels of knowledge of the amount of peer group support.

Independent Variables

(a) Opinion Strongth (OS) The two levels of opinion strongth used were a

The thirty topics on this questionnaire had been chosen so as to have no undue emotional value, but to be of some interest to them. (eg. "Speed limits on main highways should be increased) In particular, topics of direct political or religious significance were omitted. See appendix A for this questionnaire.

strong opinion and a mild opinion. Measures of 05 were obtained by having subjects rate their opinion on each of a number of topics using a seven-point scale ranging from strongly, agree, moderately agree, mildly agree, no opinion or can't decide, mildly disagree, moderately disagree to strongly disagree. As noted above, each dyad consisted of a subject who had indicated a strong opinion on a topic and a subject who had indicated a mild or weak opinion in the opposite direction on that topic. Dyads were belanced so that in each cell one-half of the dyads consisted of strongly agree - mildly disagree pairs, and the other half strongly disagree - mildly agree pairs. A subject who had indicated a strong opinion will be referred to as "S" (strongly opinionated) and a subject who had indicated a mild opinion as "W" (weakly opinionated) on a topic.

(b) <u>Knowledge of amount of peer group support</u> (PGS) The ninety-six subjects were randomly assigned to four conditions in which knowledge of the amount of peer group support (PGS) was varied. (Twelve S and twelve W subjects in each PGS condition.) The four conditions were:-

(1) P(P)² A subject was informed that he had a substantial amount of PGS while his partner had a substantial amount of PGS (205/475 or 205/476)⁵.

(2) p(p) A subject was informed that he had a very small amount of

²This notation will be used to describe the relationship between the amount of PGS a subject has and the amount of PGS his partner has. For example, in the notation P(P), P refers to the amount that a subject has and (P) refers to the amount of PGS that the subject's partner holds. The amounts of PGS are either substantial "P" or very small "p".

²These fractions were presented to the subjects to show them how many of the 476 students like themselves who had filled out the questionnaire, had answered in the same way they did on a given topic.

PGS and that his partner also had a very small amount of PGS (11/476 or 10/476).

(3) P(p) A subject was informed that he had a substantial or large amount of PGS while his partner had a very small amount of PGS (307/476 vs 9/476).

(4) p(P) A subject was informed that he had a very small amount of PGS while his partner had a substantial or large amount of PGS (9/476 vs 307/476).

The eight cells formed by this design in terms of a subject and his partner are shown in Figure 1.

OPINION STRENGTH

64		S	Ţ.Ţ
PPOR	P(P)	SP(VP)	WP(SP)
GROUP SU	p(p)	sp(Np)	Wp(Sp)
	P(p)	SP(Wp)	WP(Sp)
DEBR	p(P)	Sp(WP)	Np(SP)

Figure 1. The basic design of the experiment in terms of a subject and who he is paired with (see text for definitions of the symbols used).

It should be noted that there is duplication in terms of dyads in the design and that only four different combinations of subjects had to be run to generate the data for the above format. These were SP-WP, Sp-Wp, SP-Wp and Sp-WP.

Sub designs

(a) <u>PGS</u> In addition to the individual comparisons among the four PGS conditions, the following orthogonal comparisons of combinations of these conditions are meaningful.

A. Equal vs unequal PGS [P(P) + p(p) vs P(p) + p(P)]

B. P vs p [P(P) + P(p) vs p(p) + p(P)]

C. Partner's PGS (P) vs (p) [P(P) + p(P) vs P(p) + p(p)]

In terms of these comparisons the experimental design becomes either

one of two 3-factor designs which are expressed graphically in Figure 2s and 2b.



Each of these designs can be generated from the conditions employed in the experiment. Instead of analyzing the data twice under these two additional designs, standard multiple comparison tests will be employed on the 2 x 4 factorial design to make these logical orthogonal comparisons.

(b) OS No knowledge condition (Sn-Wn)

In addition to the subjects run in the 2 x 4 factorial design above,

24 randomly chosen subjects (12 pairs) were formed in which only strength of opinion was varied (S and W). This condition was run in order to see the effects of the S-W variable without contamination of the PGS variable. This dyad will also be used to compare the effects of knowledge vs no knowledge of PGS.

Procedure

The experiment was conducted in the group dynamics laboratory at EcMaster University. This laboratory consists of two adjacent sound-proof rooms separated by a partition containing a one-way observation window. The observers were situated in one room and the subjects were seated opposite each other at a table in the other room.

When a subject arrived for the experiment, he was asked to wait in a nearby room until both participants were present. When both were present, they were introduced to each other. (Pairs who were acquainted previously were terminated at this point.) They were then taken to an office where the following instructions were given by an authority figure, usually a professor. The instructions to the control (C-C) group were:-

> We usually tell people a little bit about the experiments before they begin so they are not too surprised at what they are asked to do. Do you remember these forms you filled out in class? You'll remember there were a considerable number of issues included about which we asked your opinion. Well we're interested in what students think about some of these issues so we're going to ask the two of you to discuss one of them for us. I'm not sure which one it is but you'll find that out when you go into the other room. Do you have any questions? O.K. Would you like to just go into that room across the hall. Someone will look after you when you get there.

To the subjects in the support conditions, the following was added before asking the subjects "if they had any questions".

Oh yes, you may also notice some figures on the paper that look something like this. This is just a record of some statistics on the opinions of the whole class and these are the number of students in the class who marked these choices. You may be interested in this item. University exams should be abolished. You see 43 out of 476 students in your class moderately agreed

(Subjects were then shown a sample question; see Figure 3.)

and 79 out of 476 moderately disagreed. On the same issue you are to discuss we have marked how many of your 476 fellow students who answered the questionnaire have marked the same categories that you have.

Figure 3 about here

Subjects were then taken to the experimental room. After being seated, throat microphones were placed around their necks, and they were told to await further instructions. The following instructions were then read to the subjects

by means of an intercommunications system:-

Could I have your attention please. In this experiment, we are interested in observing people discussing various topics. You have indicated your opinions regarding a number of issues on this questionnaire you answered in class. I would like you to discuss one of these issues with the purpose of arriving at a common statement of your opinions; that is, until you reach some conclusion such as a common statement on agreement, compromise, or disagreement. You may talk as long as you want to. When you have reached a conclusion, ring the bell which is on the table. This will tell us that you have finished. Will you please open your questionnaire to where it is paper clipped. The topic I want you to discuss is number ? In a few moments I'll knock on the window. This will be the signal for you to start talking. But is is very important that you do not talk until I knock. Do not say a word until them. Any questions? Fine. I will knock in a moment. Remember, don't talk.

A summary of these instructions was available on the table in front of each subject. Also placed in front of each subject was his original Because:

opinion.





Sample sheet shown by an authority figure to all subjects that were to receive PGS information.
questionnaire and the information of the amount of peer group support each pair member held on a topic selected for discussion and on which the subjects held appropriate opinion strengths.

The observers listened to the subjects interacting by means of the intercommunication system. There was one observer for each subject. The following measures were recorded for each subject on an Esterline-Angus event recorder:-

- 1. Latency of first response. This was the amount of time between the signal to begin and the subjects' first response.
- 2. <u>Total amount of time spent speaking</u>. This was recorded automatically by means of throat microphones and a sound sensitive relay system.
- 3. <u>Positive amount of time spent speaking</u>. This was the amount of time a subject spent talking in favour of his own opinion. This measure was recorded by 0.
- 4. <u>Negative amount of time spent speaking</u>. This was the amount of time a subject spent talking against his own opinion. This measure was recorded by 0.
- 5. <u>Neutral amount of time spent speaking</u>. This was the amount of time a subject spoke off the topic, i.e. Made irrelevant remarks. This measure was recorded by 0.

The following time measure of group behavior was also recorded automatically.
6. <u>Pauses</u>. The number of pauses within the group's discussion where no one talked for an arbitrarily chosen period of at least four seconds. The interaction record for each pair was subsequently divided into

five equal intervals (Vincent fifths). In each time interval, the amounts of total, positive, negative and neutral time spent speaking were calculated. If

an opinion is changing, one would expect a decrease in the proportion of positive time and/or an increase in the proportion of negative time spent speaking. In this way, an attempt was made to examine the dynamics of opinion change.

Two other measures of opinion change were gathered immediately following the discussion: (1) Public - each of the subjects, while still together, wrote out and recorded his opinion on a seven-point scale identical to the one used in rating his original opinion and (2) Private - each of the subjects went to a separate table and recorded his opinion on the seven-point scale when alone.⁵

In addition to the above measures, the effect of the experiment on the individual's evaluation of his partner was measured in the private condition by means of a social distance scale modified from the scale developed by Back (1951). The scale consisted of 6 statements arranged in order according to the degree of social intimacy they suggested.

At this time, the subjects also indicated two measures of pressure to change their opinions during the discussion; pressure exerted and pressure felt. These measures were indicated on two, seven-point scales which had end points of none (assigned a value of 1), and a great deal (assigned a value of 7).

Five months after the subjects had filled out the original questionnaires, a further measure of opinion change was obtained. An opinion questionnaire containing the thirty original topics was mailed to each subject. The sevenpoint scale was again used in registering their opinions. All questionnaires were returned the following week.

⁵Sec Appendix for the Questionnaires and scales used in the Public and Private conditions.

CHAPTER FOUR

IESULTS

In this chapter the results descriptive of the course of discussion are presented first; these are followed by the results concerned with opinion and other changes as a consequence of group discussion.

The analyses presented below are based on six subjects per cell. Because the experimental situation required the subjects to interact, their behavior cannot be considered independent. Therefore, one subject was randomly selected from each dyad, the data from the other subject being discarded.

The Discussion

Who speaks first.

There was a significant tendency (binomial test, p = .028) for the subject holding the strong opinion to initiate the discussion. This was true in 39 out of the 60 dyads but showed no relation to the peer group support (PGS) condition. (In this comparison and all other comparisons involving just the opinion strength (OS) variable irrespective of PGS, the data from the Sn-Wn condition were combined with the data from the S-W dyads with knowledge of PGS only in cases where the trends were the same in both the knowledge and no knowledge conditions.)

Total discussion time.

Since the dyads carried on the discussion for varying lengths of time it was necessary to Vincentize the data to make them comparable. Escause of the considerable variability in the data of interest, Vincent fifths, rather than Vincent tenths were used.

The emounts of time spent speaking per subject and per dyad were unrelated to any of the experimental conditions and are not further referred to. It is of interest, however, that regardless of the length of the discussion, the amount of time spent speaking per dyad decreased significantly as the discussion progressed (F = 4.38, df = 4,176 p < .005) with a corresponding increase in dyad pauses or periods of silence (F = 6.03, df = 4,176 p < .001). This tendency was unrelated to PGS condition. A summary of the Analyses of Variance performed on these time data is presented in table 1. These trends also appeared in the no knowledge condition, but were not significant.

Table 1 here

The data concerned with who spoke most, the S subject or the W subject, are summarized in table 2. Analysis showed that in the no knowledge condition,

Table 2 here

the subject with the strong opinion tended to speak more than his weak opinion partner. There was no consistent tendency for either subject to speak more in those groups where PGS information was provided and these groups are combined in Table 2. A chi-square performed on the data in table 2 showed that the difference between the no knowledge and knowledge groups was significant $(\chi^2 = 5.25, df = 1, p < .03).$

Table 1

Analysis of Variance of total time spent speaking per dyad and the number of dyadic pauses per Vincent Fifth.

	MS	TP				
		*	P	MS	F	P
3	4113.057			1.856		
44	4837.276			10.114		
4	78.664	4.38	<.005	9.119	6.03	<.001
12	10,653			.783		
76	17.942			1.512		
	4 4 12 76	4 4837.276 4 78.664 12 10.653 76 17.942	4 4837.276 4 78.664 4.38 12 10.653 76 17.942	4 4837.276 4 78.664 4.38 <.005 12 10.653 76 17.942	44 4837.276 10.114 4 78.664 4.38 $<.005$ 9.119 12 10.653 $.783$ $.783$ 76 17.942 1.512	44 4837.276 10.114 4 78.664 4.38 $<.005$ 9.119 6.03 12 10.653 $.783$ $.783$ 76 17.942 1.512

Ta	ble	2

	Knowledge	No Knowledge	Total
S more	24	11	35
W more	24	l	25
Total	48	12	60

.

Distribution and Chi Square Test on which subject (S or %) spoke more within a dyad between the no knowledge and knowledge conditions.

 $x^2 = 5.25$, df = 1, p < .03

The content of discussion.

Analysis of the content of the discussion made it possible to determine the proportion of the total time spent speaking during which subjects made statements in favour of their own opinion, against their own opinion or neutral with respect to their own opinion. These proportions calculated for each Vincent fifth of time, are plotted in figure 4. There is a tendency, evident

Figure 4 here

from figure 4, for the subjects, irrespective of condition, to speak less in favour of their own opinion as the discussion progresses, and to speak more against their own opinion and more neutrally or off the topic. All three tendencies are statistically significant as shown in the summaries of the Analyses of Variance presented in table 3. Similar trends were observed in the analyses of the no knowledge condition. Summaries of these analyses can be seen in table 4.

Table 3 here

For these, and all other analyses of variance involving proportions, an arcsin

Table 4 hero



Proportions of positive, negative across time for all subjects.

Source	đĩ		Negativ	V 8		Positiv	re		Neutra	<u>11</u>		Totals	
		115	F	P	MS	F	P	MS	F	Р	13	F	E
OS	1	2.404	5.32	<.05	.019			.908	2.12	NS	2746.597	2.15	NS
PGS	3	1.905	4.22	<.025	.316			.799	1.86	NS	203.307		
os x pes	3	•235			.469	1.08	MS	1.246	2.90	<.05	1453.476	1.14	NS
Error (bet.)	40	•452			•435			.429			1278.978		
Time	4	•739	3.95	<.005	1.464	7.08	<.001	.783	4.45	<.005	20,683	1.06	IIS
Time x OS	4	.152			.174			.155			13.094		
Time x PGS	12	.401	2.15	<.025	.517	2.50	<.005	.261	1.48	NS	34.007	1.74	NS
Time x OS x P	GS 12	.097			.148			.219	1.24	NS	6.918		
Error (w)	160	.187			.207			.176			19.588		

Analyses of Variance of the Proportion of Negative, Positive and Neutral Statements and the Total Amount Spoken Per Subject in the CS x PGS Conditions

Table 3

Table 4

Analyses of Variance of the Proportion of Negative, Positive and Neutral Statements and the Total Amount Spoken Per Subjact in the No Xnowledge Condition.

		<u>I</u> :	egative		P	ositiv	3	1	Neutral			Totals	
Source	đ f	MS	F	P	MS	F	P	MS	F	P	MS	F	P
OS	1	•335			1.149			.148			1379.522		
Error (bet.)	10	.804			1,510			• 7 54			2539.821		
Tied	4	.185	1,25	N.S.	.631	2,69	<.05	.555	2,86	<.05	67.896	1.83	N.S.
Time x OS	4	.050			.422	1.79	N.S.	.279	1.43	N.S.	83.547	2,25	N.S.
Error (within)	40	•415			.235			.195			37.076		

transformation was used in order to achieve more normal distributions.

The content discussion measure most sensitive to the effects of the independent variables, and the one that will receive our main attention, is the proportion of time a subject spent speaking against his own opinion. The other content measures, the proportions of time spent speaking positively and neutrally which were not as sensitive, can be taken up more briefly and will be discussed first. Summaries of the analyses of variance on all three of these measures are presented in table 3.

<u>Positive proportions</u>. The mean proportion of time a subject spent speaking in favour of his original point of view was unrelated to any of the experimental conditions. However, there was a significant PGS x time interaction (F = 2.50, d = 12,160 p < .005). Unfortunately, the interaction does not appear to follow any consistent pattern and defies interpretation.

<u>Neutral proportions.</u> As with positive proportions, neither opinion strength nor PGS alone appeared to affect the proportion of time a subject spent speaking neutrally or off topic. However, there was a significant interaction between PGS and OS on this measure (F = 2.90, df = 3,40 p < .05). This interaction appears entirely accountable for by the condition in which a subject had a substantial amount of PGS while his partner had a very small amount [P(p)]. In this condition, a strongly opinionated subject speaks most neutrally and a weakly opinionated subject speaks least neutrally than any other subject. This interaction is presented graphically in figure 5.



Figure 5. Mean proportions of positive, negative, and neutral statements uttered by strong and weak subjects in each PGS condition.

Regative proportions. As wentioned above, the proportion of time a subject spent speaking against his own opinion was the most sensitive to the effects of the independent variables, opinion strength and peer group support. Furthermore, this measure was most highly correlated with the post discussion measures of opinion change, pressure felt and pressure exerted. (See table 6 for correlations between the discussion and post discussion measures.) The summary of the PGS x OS analysis of variance performed on this measure is presented in table 3 and graphically in figure 5. Considering first the opinion strength variable. it appears that a subject with a weak opinion spoke more negatively than a subject with a strong opinion (F = 5.32, df = 1.40 p < .05) irrespective of PGS. With regard to the significant effect of PGS (F = 4.22, df = 3.40 p < .025). it appears that subjects who had little PGS while their partner had a substantial amount [p(P)] spoke most negatively of all subjects (Scheffe, p < .01). Furthermore, when PGS conditions are combined to make the three meaningful orthogonal comparisons referred to on p. 26 of this thesis (i.e. those conditions where a subject had relatively equal PGS against those where he had unequal PGS; those conditions where a subject had a substantial amount of PGS [P] against those where he had very little PGS [p]; and those conditions where a subject's partner had a substantial amount of PGS [(P)] against those conditions where a subject's partner had a very small amount of PGS [(p)]), it is found that subjects in unequal PGS conditions spoke more against their own opinion than did subjects in the equal PGS conditions (Scheffe, p < .01); and that subjects whose partner had a substantial amount of PGS spoke more negatively than subjects whose partner had a small amount of PGS (Scheffe, p < .05). There was also a tendency, not significant. for subjects with a small amount of PGS to speak more negatively than subjects who hold a substantial amount.

A significant time x PGS interaction (F = 2.15, df = 12,160 p < .025) was also observed in this analysis. It appears that this is due to the fact that all PCS conditions started at an equal level and then diverged with the subjects in the unequal PCS conditions almost continually making a higher proportion of negative statements over time than those subjects in the equal PGS conditions.

Opinion change and other post discussion measures.

In this section, the measures of main interest are the post discussion measures of private opinion change and pressure felt. The measures of opinion change obtained from the mailed questionnaire, social desirability, and pressure exerted will be discussed only briefly as they failed to show differences attributable to the variables employed in this experiment.

Opinion change.

The post discussion measures included opinion change as measured under a public condition, private condition and by means of a mailed questionnaire. Of these, only one, the private opinion change measure, was analyzed. The public opinion measure was not analyzed because of the high correlation between public and private opinion change (Tau = +.988). The mailed questionnaire data, originally intended to assess stability of opinion change, could not be analyzed because while all subjects returned the questionnaire, few showed opinion change. It should be noted, however, that these data, which can be seen in Appendix B, suggest that strongly opinionated subjects who had a vory small amount of PGS while their partner had a substantial amount [Sp(P)] changed more often and to a greater degree than all other subjects. We will now turn to the private opinion change measure . <u>Private opinion change toward partner</u>. This measure, the amount of private opinion change toward partner,⁶ showed the effect of both the CS and PGB. Since the distribution of the opinion change data was J-shaped, with half the subjects indicating no change toward partner, all analyses performed on these data are non-parametric.

Irrespective of opinion strength, there was a tendency for subjects to be differentially affected by the PGS condition they were in. This is substantiated by a Kruskal-Wallis one-way analysis of variance, corrected for ties ($\pi = 10.70$, df = 3, p < .02). Inspection shows (see figure 6) that the most opinion change

Figure 6 about here

occurred in the p(P) condition, the least in the P(P) condition. A median test gave similar results ($x^2 = 9.05$, df = 3, p < .05). Since the median was zero or no moves toward partner the median test can be interpreted as dichotimizing the data in terms of change toward partner and no change toward partner. Using this measure in making the orthogonal comparisons referred to before (i.e. equal vs unequal, p vs P, and (p) vs (P)), it appears that more subjects changed in the unequal condition than in the equal PGS condition (Fisher's Exact, p = .079) and that more subjects who had a very small amount of PG3 changed than subjects who had a substantial amount of PGS (Fisher's Exact, p = .079). The comparison between the conditions where a subject's partner had a small amount of PG3 and

⁶Four W subjects (3 random) indicated a change away from the position advocated by their S partners. All negative changes were only one-step removed from the initial W opinion and were treated as zero or no moves toward partner.



Figure 6. Median amount of opinion change toward partner by strong and weak subjects in each PGS condition.

conditions where a subject's partner had a substantial amount of FGS was ren significant ($X^2 = .358$, df = 1, p = N.S.), though more subjects changed in the (P) conditions than in the (p) conditions.

Opinion strength was also a determinant of private opinion change but only when the amount and frequency of opinion change was considered. Then frequency of opinion is considered there was a tendency, but not significant, that more strong subjects changed their opinion than weak subjects (Fisher's Exact, p = .079). This tendency was unexpected. The magnitude of change, however, was in the expected direction. If just those subjects that did change are considered, it can be seen in table 5 that the weak subjects that did change,

Table 5 here

moved more than those strong subjects that changed (Fisher's Exact, p = .01).

There is also a suggestion that the amount of PGS may have affected strong and weak subjects differentially. This is substantiated by a Mood-Brown median test for interaction (Tate and Clelland, 1957) ($\chi^2 = 8.35$, df = 3 p < .05). This interaction appears between the equal and unequal PGS conditions. Whereas a strong subject changed his opinion less in equal PGS conditions than in the unequal, a weak subject changed about the same in the equal and unequal PGS conditions.

Similar results were obtained when the comparison was made between the unequal and equal PGS dyads in terms of which subject, strong or weak, changed his opinion more than his partner's; eleven of the thirtcen strong subjects that changed more than his partner did so in the unequal PGS dyads, seven of the

Table	5
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Distribution and one step and the	one step and those that moved two or more steps toward their partner's position.									
	S	W	Total							
l step	10	l	11							
2 or more steps	6	10	16							
Total	16	11								

P = .01

sixteen weak subjects that changed more than his strong partner did so in the unequal PGS dyads (Fisher's loadt, p = .052).

Social distance.

Eack (1951), the creator of this particular social distance scale, suggested that the number of yes responses be used in scoring this measure. Using this technique, analysis on the PGS x OS conditions and on the no knowledge condition failed to show any significant differences attributable to the variables employed in this experiment.

Pressure felt and pressure exerted.

Analysis of the amount of pressure a subject thought he exerted failed to differentiate the conditions employed in the experiment. However, the amount of pressure a subject felt was exerted on him was related to the opinion strength variable. Weak subjects tended to feel more pressure than strong subjects (t = 3.93, df = 58 p < .001). The distribution of the pressure measures are presented in figure 7 while not significant, the distribution of the pressure felt in the various PGS conditions is of interest as it is similar to the distributions of private opinion change and the proportion of negative statements spoken. As can be seen, the subjects in the p(P) condition tended to feel the

Figure 7 here

most pressure; subjects in the unequal PGS conditions tended to feel more pressure





,

than subjects in equal PGS conditions; subjects who had a very small amount of PGS tended to feel more pressure than subjects who had a substantial amount of PGS; and subjects whose partner had a substantial amount of PGS tended to feel more pressure than subjects whose partner had a very small amount of PGS.

Correlations among measures.

Correlations among the measures were obtained in order to help understand the relationships among the dependent variables employed in this experiment. Because the post discussion opinion change measure was not normally distributed, Kendall's Tau Statistic was used. The results of these correlations are seen in table 6. In general, the more a subject changed his opinion, the more negatively he spoke; the less positively he spoke, the more pressure he felt emerted on him; and the less probleme he thought he emerted. Furthermore, the proportion of

Table 6 hore

negative speaking was most highly and neutral least correlated with the post discussion measures employed in this study.

In addition to the correlations shown in table 6, the total amount spoken by a subject and the amount of opinion change of his partner were significantly correlated (Tau = +.25 p < .01).

Table 6

Tau Correlations among measures (n = 60)

	D	iscussion Meas	Post Discussion Measures				
1102		Negative	Positiva	Neutral	Pressure Folt	Pressure . Exerted	Social Distance
Measu	Private Opinion Change	•30° ° °	-,22**	.01	•26**	 33° **	.08
noisi	Pressure Felt	.15°	14	0 ¹ ;			
Discus	Pressure Exerted	26**	. 22**	03			
Post				100° > d eae			-
				•• p < .01			
				* p < .05			

CHAPTER FIVE

DISCUSSION

The main findings of interest and those taken up first, are concerned with the effects of opinion strength and amount of peer group support on opinion change following discussion. Of secondary interest is the finding that subjects tend to speak less in favour of their own opinion, and more against it and more neutrally or off-topic, as the discussion progresses. This finding has been repeatedly observed in other experiments (Carment, Schwartz and Miles, 1963, 1964; McGrath and Julian, 1963; and Norrison, 1965) and appears to be independent of the particular variables manipulated. However, these trends in the discussion show some instructive correlations with measures of opinion change, and pressure that a subject felt had been exerted on him and that he felt he had exerted on his partner to change his opinion. The discussion of these correlations forms the second part of this chapter.

In the sense that he typically began the discussion, changed his opinion to a lesser degree and consistent with this, spoke less against his own opinion and felt that less pressure had been exerted upon him, the subject with the strong opinion may be regarded as the leader within the dyadic situation. These findings are consistent with Sarbin's (1954) role expectancy theory. In summary, the theory states that, because of past experimental situation expecting the one with the stronger opinion to take the initiative in beginning the discussion and, in general, to persuade rather than to be persuaded. The theory does not, however, predict the finding of this experiment that the subject with the strong opinion tended to change that opinion <u>more often</u>

then did the subject with the weakly held opinion. This change tended to be a change of only one unit on the scale and fits Gouldner's (1960) notion of reciprocity in such situations. While this one-unit change may not have been known to the partner because the exact amount of change was not assessed until the discussion was over, nevertheless it is entirely plausible that the subject with the strong opinion gave evidence of this change in the course of the discussion which, according to Gouldner, would make it easier for the subject with the weak opinion to change.

The finding that a subject with substantial peer group support compared to that of his partner tended not to change his opinion has been reported by others (Mausner, 1954a, 1954b; and Mausner and Bloch, 1957). Indeed it has been shown that, even in the absence of discussion, knowledge of an external standard, or norm acts to bring about opinion change in the direction of the norm (Moore, 1921; Wheeler and Jordan, 1929; Marple, 1935; Wiener, et al., 1956, 1957; Wiener, 1958; King, 1929; and Walker and Heyns, 1962). Since in the present experiment both subjects knew the amount of PGS their partner had, it seems likely that the well-supported opinion served as a norm. Festinger (1950) has suggested that in situations where there is no empirical referent a subject relies on the majority view for what constitutes social reality or correctness of opinion. Consistent with this interpretation is the further finding that, in those conditions where amount of peer group support was equal, subjects changed their opinion less and spoke less against their own opinion. This is in agreement with findings reported by Mausner and Eloch (1957).

Other findings with regard to the effect of peer group support on opinion change, in particular the tendency for subjects with strong opinions to change more than their weak opinion partner when they had either more or less

support, as compared to the conditions where support was equal, defies simple interpretation. In view of the relatively few subjects on which it is based, it may be better left for confirmation in future emeriments.

Turning now to the discussion itself, the main finding was that. over all conditions, subjects tended to speak less in favour of their own opinion as the discussion continued and to speak more evaluat their opinion and more neutrally or off-topic. There was also a significant tendency for the number of periods of silence or pauses to increase towards the end of discussion. The proportions of positive and negative statements made by subjects show some interesting correlations with opinion charge and with the amount of pressure a subject folt he exerted on his partner and the excunt of pressure he felt his partner exerted on him. These correlations are reported in table 6 (following p. 40) in the Results. The patterning of the correlations suggest that the subject who changed his opinion most tended to make the fewest positive and most negative statements and had most talk directed at him. Consistently the subject who changed his opinion most and made the most negative statements, felt he had exerted less pressure on his partner and had more pressure exerted on him. Conversely, the subject who changed his opinion least and made the most positive statements. felt he exerted more pressure on his partner and that less was exerted on him. The proportion of neutral statements does not correlate significantly with any of these variables and the increase in the number of these statements and in the number of pauses may simply mean that the subjects were running out of relevant things to say.

While the main results of this experiment form a fairly consistent pattern, the effects are disappointingly small. In particular, the effect of peer group support on opinion change is not as clear as might have been hoped.

This is probably due to a number of things including the small number of subjects used in each PGS condition and the relative insensitivity of some of the measuring devices to relativoly small changes and the inability of these measures to separate compliance changes from real opinion changes. Retrospectively. it might have been better to use an opinion scale with a wider range, and to select subjects defined as having a strong opinion from some scale position other than the extreme so that it would have been possible to assess an opinion change in either direction. It may well be that some of these subjects did in fact change to a still stronger position but that this could not be assessed. Further, it night have been advisable to have investigated how opinion strength and equal and unequal PGS interact in producing opinion change in separate experiments. This would have made it practical to increase the number of subjects and simplified problems of interpretation. While the various interactions provided for in the design of this experiment are undoubtedly of interest, the effects of each independent variable should perhaps be clearly established before studying their interaction.

In any event, it is clear from this experiment that dyadic discussion and subsequent opinion change are effected differentially by opinion strength and peer group support and that, in general, the obtained relationships are consistent with findings of other investigators.

CHAPTER SIX

SUIGEARY

In this experiment sixty pairs of male subjects discussed an issue on which they held opposite opinions. One member of each pair held either a strong positive or a strong negative opinion on the issue while his partner held a weak and opposite opinion. In addition to being paired on the basis of opinion, selection was such that no members of a pair were acquainted prior to the experiment, that they were of the same age, and in the same year at university.

Forty-eight of these pairs were divided into four subsets of twolve pairs each. Subjects in each subset were given different fictitious information as to the number of their fellow students who shared their opinion. These are referred to as peer group support (PCS) conditions. In one of these conditions, a subject was informed that both he and his partner had substantial PCS; in the second condition, both were informed they had very little PGS; in the third, one subject was told he had substantial PGS and his partner had very little; in the fourth and final condition, one subject was told that he had a little PGS and his partner had a substantial amount. The remaining twolve pairs were given no knowledge of PGS.

The wain findings vers:

Irrespective of the PGS condition, the subject with the strong opinion tended to initiate the discussion more often, speak less against his own opinion, feel less pressure to change his opinion and to change his opinion to a lesser degree when he did change his opinion, though he tended to change more often than the subject with the weak opinion. In addition, when there was no knowledge of PGS,

the subject with the strong opinion tended to speak more than the subject with the weak opinion.

The amount of PGS a subject had and the amount of support that his partner had affected both the discussion and opinion change. The subject who had a smaller amount of PGS than his partner, tended to speak more against his own opinion and to change his opinion more.

Both the subject with the strong opinion and the subject with the weak opinion appeared to be affected differently in the equal and unequal PGS conditions. In general, subjects in the unequal conditions tended to speak more against their own opinion and to exhibit a greater amount of opinion change than did subjects in the equal PGS conditions.

Correlations performed between measures suggest that regafdless of condition, the more a subject changed his opinion, the more he spoke against and the less he spoke in favour of his own opinion, and the more pressure he felt was exerted on him and the less pressure he folt he had emerted on his partner. Furthermore, the more a subject's partner talked, the more likely it was that the subject changed his opinion.

Irrespective of condition, as discussion progressed, there was an increase in the proportion of negative and neutral statements, a decrease in the proportion of positive statements and more frequent periods of silence.

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APPENDIX A

McMaster University

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DEPARTMENT OF PSYCHOLOGY

Questionnaire

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Instructions

. . **.**

We would like to have your opinion on each of the items listed below. Indicate whether you agree or disagree with each statement by placing the appropriate code number on the line following the statement.

The code numbers are on the accompanying sheet. Refef to this sheet before you respond to each item.

If you have no opinion, or cannot decide, indicate this by using the appropriate code number and, <u>in addition</u>, include one or more of the code numbers of the reasons on the left or right side of the page. If you have any questions ask the instructor before you begin.

Work quickly, but remember it is important that you give a true picture of your opinions.


NO1 I don't have enough information on which to base an opinion.

Because:

302_ I'm really not interested one way or the other.

Moderately Disagree

the time.



Strongly Esagree

1.	The marriage of undergraduates should be actively discouraged.	
2.	Immigration to Canada should be restricted.	
3.	Given ability, university education should be free.	
4.	Canada should eventually join the U.S.A.	
5.	University final examinations should be abolished.	
6.	French-Canadian culture is a handicap to Canada.	
7.	You cannot reduce racial discrimination by law.	
8,	The majority of television programs are not worth watching.	
9.	There is too much emphasis on sex today.	
10.	Initiations at the university level should be abolished.	
11.	The government should socialize medicine.	
12.	The legal age for drinking should be lowered to eighteen years.	
13.	Fraternities should be allowed at McMaster University.	
14.	There is too much emphasis placed on the value of a university education today.	
15.	True freedom of speech exists in Canada today.	
16.	The Monarchy is an outmoded appendage to our society.	
17.	The voting age should be lowered to eighteen years.	
18.	Death as a punishment should be abolished.	
19.	College students should not be required to take physical education.	
20.	Canada should have a national flag of her own.	
21.	Slipshod manufacture is characteristic of American products.	
22.	All public and high school teachers should be required to have a university degree.	
23.	Canada is in decline as a nation.	
24.	The Ontario education system is inadequate.	

'

25.	Speed limits on main highways should be increased.	<u></u>
26.	Grade 13 is a waste of time.	. <u> </u>
27.	A national lottery would be of benefit to Canada.	
28.	The "Buy Canadian" emphasis is detrimental to our economic well-being.	
29.	The Senate should be abolished.	
30.	Cigarette advertising should be prohibited by law.	

INSTRUCTIONS

Subjoct

Before the Experiment

DO NOT TALK until you hear the knock on the window

During the Experiment

Arrive at a common verbal

statement of your opinion,

my one of these: -

(a) Disagroement

(b) Compromise

(c) Agreement

DO NOT write anything. THEN: Ring the boll.

FINAL SHEET

To Be Answered Together.

Date	Name					М	F
		Surname	Giv	en name	<u>}</u>		
	Name					м	F
		Surname	Giv	en name	;		
ur opinion on the topic	#		now, af	ter dia	cussion	, is	
		····					
			** • • • • • • •	····· +21*			
		~ 2 mile 1 4 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	,	,,,4. 9	······································		
·····	····						••••••
			çh î() - _{î î} î î î î				·····
			·				
	*				·····		
n other words our opinic	ons wit	th regard	to the	stateme	ent are	repre	sented
elow. (Each participant	shou	Ld write	the appr	opriate	e answer	in t	he space.
rovided.							
ame			Name				<u>_,_</u>
riginal Opinion			_ Origin	nal Opi	.nion		
					- •		

(use code letters)

CONFIDENTIAL

FINAL SHEET

	<u>To be fill</u>	ed out al	Lone		
Date	Name			м	F
	Surr	lame	Given name		
ou original opinion c	n topic #	was:			
y opinion on the topi	c now, after disc	ussion, :	is:		
		L**			
	······································				
·····					
······	·····	1-1200			
				- Altonici	
					+
					
		ted below			
n otner words, my opi	nion is represent	ted DeTOM	•		

Opinion after discussion _____

(use code ltters)

According to your first feeling reactions place a check (\checkmark in front of all those relationships which you would be willing to enter into with the other participants.

- () I would like to see him around campus sometime.
- () I would want to have him in the same class.
- () I would enjoy talking to him.
- () I would like to discuss serious general problems with him.
- () I would want him to come to me with his problems.
- () I would discuss important personal problems with him.

Please place an X directly above the numbers you choose on the following two questions.

How	much	pressur	e did	you feel	exerted	upon you	u to chai	nge your	opinior	1?
Non	θ.	1	2	3	-4-	5	6	7	Grea t	Deal
How	much	pressur	e did	you exert	; on the	other pe	erson to	change	his/her	opinion?

None	1	2	3	-4	5	6	-7	Great	Deal
	-	-	-		-				

APPENDIX B

DYADIC TEMPORAL MEASURES

	Total ((expres	Dyadic	c Pauses							
Vincent fifths	1	2	3	4	5	1	2	3	4	5
SP-WP Dyad										
1	33.0	34.0	35.0	31.0	31.0	0	0	0	0	0
2	50.0	56.0	57.0	53.0	48.0	1	0	0	1	0
<u>ح</u>	11.3	13.0	15.0	16.0	15.5	2	0	T	0	2
4	0.8	13.0	9.2	10.0	12.0	0	0	2	0	1
2	93.0	93.0	84.0	93.0	98.0	0	2	2	2	11
0	04.0	05.0	90.0	95.0	104.0	0	1	0	0	0-
	18.0	19.5	23.0	21.5	21.0	Ť	0	2	0	
0	110.0	109.0	111.0	117.0	105.0	0	±	2	5	
29	00.0	90.0	97.0	00.U	26.0	2	0	7	2	
10	51.0	52.0	27.3	24.0	20.0	.	2	2	2	2*
11	14.0	10.0	10.0	111.0		U I	2	2	2	2*4 L+1
16	112.0	112.0	92.0	JTT 0	94.0	T	2	+	1	7'3
Sp-Up Dyad										
1	21.0	26.0	25.0	27.0	20.0	0	0	0	0	0•
2	32.0	34.0	32.0	29.0	30.0	0	0	0	0	0
3	33.0	31.0	35.0	30.0	29.0	0	0	0	3	4•
4	64.0	52.0	69.0	61.0	48.0	1	7	5	5	6
5	45.0	46.0	41.0	41.0	28.0	0	0	1	0	4
6	72.0	78.0	71.0	71.0	69.0	0	0	2	2	11
7	20.0	23.0	24.0	21.0	18.0	0	0	0	1	0+1
8	19.6	22.3	22.5	22.0	19.0	2	2	1	1	1•
9	88.0	89.0	84.0	84.0	91.0	1	6	4	1	1*:
10	13.0	11.6	14.5	13.6	12.5	0	0	0	0	0=1
11	4.3	4.3	5.0	5.5	2.7	0	0	0	0	1*1
12	25.5	27.0	27.0	21.0	27.0	3	0	1	4	3•1

• Dyads in which the S subject spoke first.

! Dyads in which the S subject spoke more.

DYADIC TEMPORAL MEASURES

	Tota (exp	al Tim presse	o Spoka d in ca	en by l entime	Dyad ters)	Number of Dyadic Pauses					
Vincent fifths	l	2	3	4	5	1	2	3	4	5	
SP-Vp Dyado											
1 2 3 4 5 6 7 8 9 10 11 12	36.5 26.0 39.0 42.0 36.0 9.6 39.3 94.0 70.0 21.6 21.0 31.0	39.0 22.0 43.0 40.0 45.0 10.9 44.0 97.0 75.0 22.0 24.9 29.0	35.6 26.0 48.0 48.0 37.0 12.1 45.0 92.0 69.0 20.0 24.0 26.0	41.0 23.0 43.0 31.0 11.3 44.0 95.0 71.0 18.0 21.5 25.0	44.0 21.0 42.0 30.0 31.0 9.5 40.0 93.0 63.0 16.0 19.0 22.0	1 2 0 2 0 1 0 0 0 3 0	0 2 0 7 0 0 0 7 0 0 0 0	010320010111	1 0 4 2 0 0 1 0 1 1	1° 0*1 0 7 4*1 0*1 3 3*1 1*1 1*1 2	
Sp-VP Dyads											
1	36.0	36.0	38.3	34.0	37.0	0	0	0	1	01	
2	15.0	15.0	16.0	18.3	16.3	0	0	0	0	01	
3	103.0	111.0	107.0	114.0	118.0	0	2	0	0	0*	
4	5.5	8.0	9.3	8.5	9.1	0	0	0	0	0*1	
5	67.0	71.0	55.0	67.0	54.0	5	4	6	6	14•1	
6	38.0	38.0	38.0	40.0	34.0	0	0	0	0	0*	
7	103.0	97.0	96.0	80.0	77.0	0	0	2	3	71	
8	59.5	62.0	62.0	65.0	54.0	2	1	3	3	4+1	
9	7.3	8.3	7.8	7.6	7.5	0	0	0	0	0*	
10	6.3	5.8	6.6	3.1	5.1	1	2	3	4	1+1	
11	52.5	54.0	61.0	54.0	53.0	0	0	0	0	1+1	
12	35.0	36.0	31.0	32.0	36.0	2	3	0	0	2	

* Dyads in which the S subject spoke first.

! Dyads in which the S subject spoke more.

DYADIC TEMPORAL MEASURES

	Tota (exp	l Time ressed	Spoke in ce	n by I ntimet)yad ;ers)	Number of Dyadic Pauses						
Vincent fifths	1	2	3	4	5		1	2	3	4	5	
Sn Un Dyads												
l	74.0	84.0	86.0	70.5	59.0		0	0	0	1	31	
2	25.0	21.5	33.0	26.5	17.5		1	2	2	2	8=1	
3	10.0	15.0	11.0	11.8	11.0		0	2	3	3	5*1	
4	10.0	13.0	12.0	15.0	9.0		0	0	1	0	0*	
5	59.0	31.0	41.5	41.0	29.0		2	0	0	0	0*1	
6	15.0	12.0	24.0	19.0	11.0		0	1	0	0	0*1	
7	11.5	7.5	4.0	13.0	8.5		0	1	1	0	0*1	
8	43.0	48.0	65.0	57.0	62.0		2	1	2	1	1*1	
9	3.0	4.0	0,5	5.5	4.0		l	5	1	8	71	
10	19.0	26.0	25.0	16.0	14.0		0	0	0	0	0=1	
11	2,1	0.2	3.3	3.5	2.0		1	0	0	1	2•1	
12	23.0	29.0	31.0	43.0	36.0		1	0	0	0	1•1	

* Dyads in which the S subject spoke first.

! Dyads in which the S subject spoke more.

Total Time Spent Speaking Across Time in Contineters

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			S Su	bject			ŀ	Subje	ct		
Vincent Fifth	us Subject	1	2	3	4	5	l	2	3	4	5
P(P)	1 2 3 4 5 6	24.0 7.0 1.0 13.0 42.0 12.0	23.0 3.0 11.0 3.3 36.0 10.0	27.0 8.0 2.2 8.0 53.0 2.5	17.0 7.0 4.0 7.0 48.0 10.0	23.0 10.0 7.0 5.6 46.0 11.0	19.0 33.0 53.0 56.0 4.0 30.0	21.0 28.0 42.0 44.0 2.0 26.0	19.0 34.0 52.0 49.0 4.0 20.0	16.0 36.0 45.0 56.0 5.0 34.0	14.0 42.0 58.0 49.0 3.0 32.0
p(p)	1 2 3 4 5 6	18.0 5.0 29.0 4.6 3.0 14.0	18.0 12.0 27.0 11.3 3.0 15.0	17.0 14.0 21.0 10.0 4.0 11.0	13.0 15.0 27.0 13.0 2.5 14.0	9.0 15.0 13.0 11.0 2.0 16.0	16.0 44.0 44.0 11.0 46.0 0.0	13.0 29.0 63.0 5.0 40.0 6.6	17.0 42.0 51.0 12.0 41.0 5.0	15.0 37.0 45.0 9.0 44.0 5.0	12.0 36.0 43.0 9.0 49.0 8.5
P(p)	1234 56	15.0 14.0 6.0 26.0 33.0 13.0	10.0 22.0 4.3 32.0 36.0 11.0	15.0 21.0 6.6 27.0 38.0 9.0	12.0 10.0 8.0 50.0 26.0 8.0	9.0 26.0 5.5 25.0 33.0 10.0	29.0 68.0 2.0 24.0 4.3 18.0	11.0 71.0 1.0 19.0 4.0 25.0	24.0 72.0 4.0 27.0 4.3 25.0	6.0 72.0 2.5 13.0 3.6 27.0	16.0 73.0 3.5 15.0 5.0 19.0
p(P)	123456	7.0 43.0 20.0 36.5 3.0 30.5	7.5 46.0 18.0 49.0 2.3 27.0	3.0 37.0 16.0 38.0 6.0 33.0	9.3 36.0 16.0 47.0 1.0 33.0	6.3 29.0 15.0 38.0 2.5 24.0	12.5 22.0 17.0 13.3 8.0 19.0	26.0 21.0 20.0 20.0 1.9 19.0	22.0 37.0 15.0 16.0 4.0 14.0	22.0 29.0 15.0 17.0 3.3 14.0	17.0 15.0 11.0 17.0 7.0 11.0
No Knowledgə	1234 56	130.0 52.0 25.5 22.0 112.0 8.5	124.0 43.5 27.5 26.5 117.0 7.5	116.0 58.0 18.0 22.5 130.0 11.5	100.5 56.5 23.0 26.8 129.C 11.5	97.0 39.5 20.0 25.0 130.0 10.5	17.0 51.0 92.0 8.1 27.0 53.0	17.3 59.0 63.0 9.2 27.0 64.0	17.5 60.0 64.5 8.3 30.0 58.0	18.0 65.0 58.0 11.5 26.5 83.0	14.3 50.0 56.0 11.0 21.0 86.0

Positive Time Spont Speaking Across Time in Centimeters

				S Sul	b ject s					W Sub	ects		
Vincent	Fifths	Subjects	1	2	3	4	5	1	L	2	3	4	5
P(P)		1 2 3 4 5 6	22.0 6.3 1.0 11.0 25.0 7.0	17.0 1.5 9.0 1.0 21.0 8.0	18.0 6.6 0.3 7.0 19.0 0.5	10.0 4.6 2.3 3.0 24.0 6.0	12.0 6.0 4.0 2.0 18.0 7.0	12 17 44 31 31	2.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	16.0 10.0 31.0 35.0 0.5 11.0	10.0 15.0 33.0 29.0 1.5 6.0	9.0 16.0 35.0 38.0 3.0 10.0	0,6 11.0 39.0 30.0 1.3 5.0
p(p)		123456	10.0 2.0 24.0 1.9 0.0 4.0	11.0 7.0 18.0 10.0 1.3 10.5	12.0 10.0 5.0 7.0 2.0 5.0	6.0 9.0 13.0 12.0 1.0 4.6	2.0 10.0 2.0 9.0 0.5 9.0	1.0 28 34 4 20 0).0 3.0 4.0 1.0 0.0	8.0 17.0 31.0 2.0 21.0 4.6	11.0 31.0 26.0 11.5 8.0 1.0	9.0 26.0 12.0 8.0 13.0 4.0	5.0 14.0 1.3 3.0 16.0 2.6
P(p)		1 2 3 4 56	5.0 6.0 4.0 22.0 23.0 8.5	5.0 10.0 2.0 16.0 20.0 4.0	10.0 10.0 2.6 12.0 15.0 4.0	7.0 1.2 0.0 9.0 12.0 4.6	3.3 10.0 0.6 12.0 12.0 1.6	23 51 0 18 3 13	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7.5 40.0 9.0 3.0 12.0	18.0 45.0 2.5 20.0 0.3 12.0	2.6 36.0 1.3 7.6 2.0 12.0	12.0 14.0 0.6 6.0 3.5 6.0
p(P)		1 2 3 4 5 6	6.0 17.0 11.0 22.0 1.1 27.0	6.0 33.0 6.5 26.0 1.3 1 7.0	1.0 26.0 4.5 30.0 2.3 18.0	6.0 20.0 10.0 30.0 0.0 3.0	5.0 14.0 4.0 21.0 1.0 8.3	12 18 6 10 8 12	503000	18.0 11.0 6.3 9.0 0.5 10.0	14.0 22.0 1.6 8.0 0.6 11.0	17.0 7.0 1.1 10.0 0.0 8.0	7.0 7.5 4.3 11.0 2.6 4.0
No Knowl	.edge	1 2 3 4 5 6	26.0 16.0 7.0 5.5 41.0 14.0	19.6 2.0 9.0 5.0 20.5 10.0	6.0 15.0 8.0 11.0 29.0 19.0	5.0 6.5 10.5 1.0 2 6 .0 15.0	5.5 1.5 5.5 2.5 17.0 9.0	10 15 0 13 1	0 0 0 3 0	1.0 21.5 0.0 15.0 0.0 19.0	0.0 51.0 0.0 15.0 2.0 17.0	8.9 24.0 3.0 8.0 2.5 27.0	2.3 15.5 0.0 5.0 1.0 20.0

Neutral Time Spont Spoaking Across Time in Centimeters

				S Sub	je cts			W Subject3					
Vincent	Fiîths Su	lbjed	1 ts	2	3	4	5		1	2	3	4	5
P(P)		1 2 3 4 5 6	1.7 0.7 2.0 11.0 5.0	6.0 1355 2.0 2.3 12.0 2.0	9.0 1.4 1.9 1.0 32.0 2.0	6.7 1.0 1.7 2.7 22.0 3.7	5.0 3.5 3.0 1.6 23.0 2.5		3.4 14.0 8.4 23.0 1.0 13.4	2.7 17.4 8.7 6.0 0.9 15.0	8.0 15.0 19.0 19.0 2.0 12.9	6.7 17.5 10.0 17.7 2.0 22.0	8.4 23.0 16.0 17.0 1.1 26.0
p(p)		123456	6.5 3.0 4.5 2.7 3.0 7.7	6.7 5.0 9.0 1.3 1.7 3.2	4.7 4.0 14.5 3.0 2.0 3.5	6.0 6.0 13.0 1.0 1.5 8.1	5.5 5.0 9.0 2.0 1.6 7.0		5.7 9.4 9.7 6.7 25.0 0.0	4.7 8.4 31.0 3.0 18.4 1.4	4.8 10.0 24.0 0.5 31.5 2.5	6.0 5.0 23.0 1.0 29.0 0.0	7.0 21.0 33.7 6.0 29.7 5.9
P(p)		123456	10.0 8.0 2.0 4.0 10.0 4.2	4.7 10.0 1.7 14.0 16.0 4.0	4.7 10.0 2.4 14.5 20.0 5.0	5.0 4.8 7.7 18.4 13.7 2.9	5.7 11.0 2.9 11.0 20.7 8.4		5.0 4.5 1.4 1.0 0.5 5.0	2.5 21.0 0.0 4.0 0.4 13.0	0.7 22.0 1.0 4.5 2.0 11.0	0.8 21.0 1.2 2.4 1.6 15.0	3.0 18.0 0.9 3.7 1.5 10.7
p(P)		1234 56	1.0 22.0 7.5 14.5 1.9 0.0	0.5 11.0 10.1 19.0 1.0 4.0	0.5 9.7 9.5 7.7 2.7 14.7	2.0 14.8 5.7 16.7 0.0 13.0	0.0 15.0 9.0 16.7 0.0 13.8		0.0 1.7 8.6 2.7 0.0 6.5	7.0 5.0 12.1 10.2 0.5 6.2	8.0 11.5 8.1 7.5 0.4 2.4	5.0 15.0 10.4 5.0 0.0 2.0	9•5 5•5 4•7 4•7 0•4 6•0
No Know	ledgo	123456	48.0 6.0 2.0 1.5 17.2 1.0	64.4 12.5 5.5 4.5 6.0 0.5	64.0 15.0 2.7 1.0 9.5 4.5	65.2 16.0 0.7 14.0 15.0 2.0	50.0 9.0 5.5 6.5 8.0 2.0		1.5 20.5 1.0 5.5 0.8 3.7	3.5 23.5 1.0 8.5 0.2 10.0	3.5 31.0 0.2 9.0 0.7 12.4	2.0 30.0 1.0 5.0 1.0 16.0	5.6 41.0 3.0 8.4 1.0 16.0

				S Sub	je cts				W Sub;	jects		
Vincent	Fifths	Subjects	1	2	3	4	5	1	2	3	4	5
P(P)		1 2 3 4 5 6	0.3 0.0 0.0 0.0 0.0 6.0 0.0	0.0 0.0 0.0 3.0 0.0	0.0 0.0 0.0 2.0 0.0	0.3 1.3 0.0 1.3 2.0 0.3	6.0 0.5 0.0 2.0 5.0 1.5	3.6 2.0 0.6 2.0 0.0 1.6	2.3 0.6 2.3 3.0 0.6 0.0	1.0 4.0 0.0 1.0 0.5 1.1	0.3 2.5 0.0 0.3 0.0 2.0	5.0 3.0 3.0 2.0 0.6 1.0
p(p)		1 2 3 4 5 6	1.5 0.0 0.5 0.0 0.0 2.3	0.3 0.0 0.0 0.0 0.0 1.3	0.3 0.0 1.5 0.0 0.0 2.5	1.0 0.0 1.0 0.0 0.0 1.3	1.5 0.0 2.0 0.0 0.0 0.0	0.3 6.6 0.3 0.3 1.0 0.0	0.3 3.6 1.0 0.0 0.6 0.6	1.2 1.0 1.0 0.0 1.5 1.5	0.0 6.0 10.0 0.0 2.0 1.0	0.0 1.0 8.0 0.0 3.3 0.0
P(p)		1 2 3 4 5 6	0.0 0.0 0.0 0.0 0.0 0.3	0.3 2.0 0.6 2.0 0.0 3.0	0,3 1.0 1.6 0.5 3.0 0.0	0.0 4.0 0.3 2.6 0.3 0.5	0.0 5.0 0.0 0.3 0.3	1.0 12.5 0.0 5.0 0.0 0.0	1.0 10.0 1.0 6.0 0.6 0.0	5.3 5.0 0.5 2.5 2.0 2.0	2.6 15.0 0.0 3.0 0.0 0.0	1.0 11.0 2.0 5.3 0.0 2.3
p(P)		125456	0.0 4.0 1.5 0.0 0.0 3.5	1.0 2.0 1.6 4.0 0.0 6.0	1.5 1.3 2.0 0.3 1.0 0.3	1.3 1.2 0.3 0.3 1.0 17.0	1.3 0.0 2.0 0.3 1.5 1.9	0.0 2.3 2.1 0.3 0.0 0.5	1.0 5.0 1.6 0.8 0.9 2.8	0.0 3.5 5.3 0.5 3.0 0.6	0.0 7.0 3.5 2.0 3.3 4.0	0.5 2.0 2.0 1.3 4.0 1.0
No Knowl	led50	123456	0.0 3.0 1.0 3.0 0.3 0.0	0.0 7.0 0.5 3.5 4.5 1.5	16.0 3.0 0.3 0.0 3.0 0.5	0.3 4.0 0.6 0.0 2.0	3.5 7.0 0.0 0.0 4.0 0.0	0.0 7.5 2.0 0.5 0.0 1.3	3.0 3.0 3.0 2.5 0.0 0.0	0.5 3.0 0.3 1.0 0.6 1.6	2.1 3.0 1.5 3.0 0.0 0.0	0.6 5.5 1.0 0.6 0.0 0.0

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Negative Time Spent Speaking Across Time in Centimeters

Amount of Private Opinion Change Toward Partner

S Subjects

W Subjects

PGS Condition		Subject's	His Partner's	Subjoct's	His Partner's
P (P)	1 2 34 56	0 1 0 0 0	C 3 5 C -1 (0) 4		1 0 0 2 0
p(p)	123456	2 0 1 0 0 1	2 2 1½ C 4 2	0 C 2 3 -1 (0) 3	0 0 2 1 0 0
P(p)	12 34 56	1 1 0 1 1	0 2 3 0 0 3	C G O 2 -1 (0) O	2 0 0 4 1
(P)	1 2 3 4 5 6	4 0 4 1 4 3	0 0 5 0	0 1 0 3 3	2 1 0 4 0 1
No Knowledge	1 2 3 4 5 6	4 0 1 0 1	0 2 0 2 5 2	2 2 3 4 -1 (0) 0	1 2 1 0 5 0

		S Subject	¥ Subject
PGS Condition	L		
P(P)	1 2 3 4 5 6	0 0 1 0 0 1	-1 (0) 2 0 0 -1 (0) 0
p(p)	1 2 3 4 5 6		-1 (0) -1 (0) 2 0 1
P(p)	1 2 3 4 5 6	0 1 0 0 0 1	0 -1 (0) -1 (0) -1 (0) -1 (0) -1 (0)
p(P)	1 2 5 4 5 6	0 0 4 0 4 3	0 -1 (0) 0 -1 (0) 2 -1 (0)
No Knowledge	1 2 3 4 5 6	4 0 0 0 0	2 0 4 0 -1 (0)

Subjects' Opinion Change Toward Partner Obtained from the Mailed Questionnairs (Mailed Questionnaire - Original Opinion)

Number of Checks on Social Distance Scale

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		S Subjects	W Subjects
PGS Conditio	on		
P(P)	1 2 3 4 5 6	3 3 1 2 0 3	3 4 3 7 3 1
p(q)	1 2 3 4 5 6	1 4 0 2 0 1	4 5 3 4 1 2
P(p)	1 2 3 4 5 6	1 3 2 1 6 3	0 1 3 2 3 3 3
p(P)	1 2 3 4 5 6	4 1 1 5 3 3	0 5 4 3 3 2
No Knowledge	e 1 2 3 4 5 6	0 4 6 0 2 4	3 5 3 5 3 3 3 3 3

2.1

Amount of Fressure Exerted

		S Su	bjects	¥ Sub	jects
PGS Condition					
P(P)	1 2 3 4 5 6		5 46564		3 3 6 6 4 4
p(p)	1 2 3 4 5 6		245551		4 26 5 5 2
(q)P	1 2 3 4 5 6		432652		553456
p(P)	1 2 3 4 5 6		2 5 5 6 1 4		646532
No Knowledge	1 2 3 4 5 6		1 56 5 35		354315

Amount of Pressure Felt

		S Subjects	W Subjects
PGS Condition	L)		
P(P)	1 2 3 4 5 6	2 2 1 2 2 1	1 4 5 2 4
p(p)	1	1	2
	2	2	2
	3	3	1
	4	2	5
	5	1	3
	6	2	6
P(p)	1	3	2
	2	2	3
	3	2	3
	4	5	6
	5	3	2
	6	1	2
p(P)	1	2	1
	2	5	6
	3	5	4
	4	1	5
	5	5	4
	6	4	2
No Knowledge	1	6	2
	2	2	5
	3	1	5
	4	1	5
	5	2	1
	6	2	6