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ABSTRACT

This paper describes a study that compared the use of consensual, nominal, and conventional decision-making techniques in established and ad hoc groups. The impact of the structural interventions on group decision quality and group attitudes is examined and the appropriateness of the techniques in various situation is discussed. Findings of the study indicate that the nominal technique is particularly well suited to situations in which time is a critical factor, while the consensual technique is apparently better suited to situations in which decision quality is critical. Both the nominal and consensual techniques appear to yield better results than conventional decision-making methods do. (Author/JG)

THE EFFECTS OF TWO NORMATIVE STRUCTURAL INTERVENTIONS ON ESTABLISHED AND AD HOC GROUPS: IMPLICATIONS FOR THE IMPROVEMENT OF DECISION MAKING EFFECTIVENESS

by

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ABSTRACT

This paper focuses on a direct comparison of consensual, nominal, and conventional decision making techniques in established and ad hoc groups. The impact of the structural interventions on group decision quality and group attitudes is examined and the appropriatness of the techniques in various situations is discussed.

INTRODUCTION

In conventional decision-making groups, a variety of inhibiting factors or liabilities have been shown to occur which ultimately lower group effectiveness [7]. Although there are a number of studies in the literature which enumerate the condition under which such inhibitory factors are likely to arise, relatively few articles have dealt with the reduction of such factors and the facilitation of the group decision-making process. Notable exceptions are the recent studies by Hackman and Kaplan [5], Hall and Watson [6], Nemiroff and King [11], and Van de Ven and Deldecq [13].

Within organizations, groups are used extensively and are frequently called upon to solve problems and make decisions on a number of different issues and topics. Two interventions which have been found to improve group decision-making performance are the consensual approach [6], [11], and the nominal group technique [4], [13]. While both approaches have been previously used individually with some success in upgrading group functioning, the authors are aware of no studies which have compared the two techniques concomitantly. Therefore, the present study was designed to assess the impact of these two normative interventions on decision making performance as well as group member attitudes. For comparative purposes, performance and attitude measures were also taken of conventional interacting groups included in the study.

Of additional interest in the present study was the issue of group tradition or life span. Decision making committees and groups can be viewed either as "ad hoc" or "established" depending upon the amount of interaction which has transpired among the group members, wherein the latter type of group has a linger working history or life span than the former. The relative impact of the aforementioned interventions on these

different group traditions has not been adequately established by previous research findings. Hall and Williams [7], indicated that established groups performed better on a decision task than ad hoc groups, whereas in a later study [8] the researchers found no performance difference between group traditions. Since the research evidence is mixed and inconclusive, the group tradition aspects of the present study should be viewed as exploratory in nature. Thus, the present study employs a 2 X 3 factorial design with group tradition (ad hoc and established) and intervention method (nominal, consensual, and conventional) as the independent variables.

METHOD

Research Hypotheses and Experimental Measures

Performance. Results of the Hall and Watson [6] and Nemiroff and King [11] studies clearly indicated that groups receiving an intervention designed to promote consensual resolution of conflicts produce better quality decisions than conventional interacting groups (i.e., groups not receiving the intervention). The nominal technique is a highly structured method of decision-making, in which the group members have the opportunity to record and present their ideas without interuption from the other group members before discussion pursues. Like the consensual technique, the nominal technique mitigates a number of inhibitory factors which typically occur in conventional groups and thereby engenders a fuller sharing of ideas. With increased tolerance for the opinions of others, more information is thought to be made available to members of groups employing consensual or nominal techniques, consequently promoting better quality decisions. Thus, a central hypothesis of the present study

was the following.

H_1: Both nominal and consensual groups will perform more effectively than conventional interacting groups.

Performance measures included 1) overall decision quality, 2) utilization of group member resources as measured by quality gains over average individual pre-discussion decisions, and 3) achievement of the "assembly effect bonus" [2].

Group Member Attitudes and Satisfaction. McGregor [10] has suggested that increasing member involvement in decision making can encourage fuller acceptance of the decision and, in turn, is likely to affect the attitudes of group members toward group work. Because of the process inherent in the nominal and consensual interventions which allow all participants an opportunity to express their ideas and potentially increase their involvement it was expected that participants in such groups would have more positive attitudes toward and express greater satisfaction with their group's functioning than would participants in the conventional interacting groups. Thus, a second hypothesis of the study was the following.

H_2: Members of nominal and consensual groups will express greater satisfaction with a) their group's decisions, b) their rated self-performance, and c) their perceived group effectiveness than will members of conventional interacting groups.

Decision Time. The nominal technique is a structured approach that allows for quick information sharing by all members of the group. In contrast, the consensual approach is less structured and encourages members to thoroughly explore and seek out differences in opinions. Furthermore, the consensual approach has been shown to require a significantly greater period of time than more traditional decision-making methods [11]. Therefore, a third hypothesis of the present study was the following:

H_3: Nominal groups will take significantly less time to reach their decisions than consensual groups.

Subjects

The experimental subjects were 192 undergraduate students enrolled in an organizational behavior course at Purdue University during the 1973-1974 academic year. All of the subjects volunteered to participate in the study, which was not a graded requirement for the course. In the "ad-hoc" condition, 24 groups of four members each were randomly assigned to each of the structural intervention conditions. While these latter groups were formed on the basis of self selection, the authors feel that the groups were randomly assigned to the intervention conditions. Nine groups were assigned to each of the intervention conditions and six groups to each conventional condition.

Experimental Procedure and Task

The decision task used in the study was the Lost at Sea exercise designed by the authors [12]. The exercise concerned the predicament of a group of persons aboard a slowly sinking yacht that has been gutted by

fire in the South Pacific. The fire supposedly destroyed critical navigation and radio equipment so that the survivors could only estimate their position as being 1,000 miles from the nearest land. The task itself required the subjects, both individually and collectively, to rank in the order of importance to survival at sea a group of fifteen items left undamaged by the fire which the survivors could take with them from the yacht aboard a small rubber raft. The rational for using such a task has been described in detail elsewhere [6]. The task demands of the problem are generally considered to be representative of multi-stage decision-making situations.

On the day of the experiment, students were asked to engage in a decision-making exercise for purposes of "demonstration and future class discussion". All subjects in the study received identical presentations of background information and task objectives. Each student received a copy of the Lost at Sea excercise and were told to complete the task individually without discussing their answers with others. After completion of the excercise, students were formed into groups of four in the ad-hoc condition with other students whom they had not worked with during the course. In the established condition, groups of students who had worked together throughout the course were asked to continue working together according to the experimenters' instructions in order to arrive at a group decision to the task. Students not assigned to groups were asked to serve as group observers and report to another area to receive their instructions. A "Group Ranking Sheet" was distributed to each group, along with specific instructions regarding the technique the group was to employ in reaching its decision.

The specific instructions given to the subjects in each of the intervention conditions are described below.

Consensus Condition. The groups in the "consensus" condition received the following set of instructions:

> This is an exercise in group decision making. Your group is to employ the method of Group Consensus in reaching its decision. This means that the ranking for each of the fifteen items must be agreed upon by each group member before it becomes part of the group decision. Consensus is difficult to reach. Therefore, not every ranking will meet with everyone's approval completely. Unanimity, however, is not a goal (although it may be achieved unintentionally), and it is not necessary that every person be as satisfied as he might be, for example, if he had complete control over what the group decides. What should be stressed is the individual's ability to accept a given ranking on the basis of logic, whatever his level of satisfaction, and his willingness to entertain such a judgement as feasible. When the point is reached at which All group members feel this way as a minimal criterion you may assume that you have reached a consensus as it is defined here and the judgement may be entered as a group decision. This means, in effect, that a single person can block the group if he thinks it necessary; at the same time, it is assumed that this option will be employed in the best sense of reciprocity. Here are some guidelines to use in achieving consensus:

1. Avoid arguing for your own rankings. Present your position as clearly and logically as possible, but consider seriously the reactions of the group in any subsequent presentations of the same point.

2. Avoid "win-lose" stalemates in the discussion of rankings. Discard the notion that someone must win and someone must lose in the discussion; when impasses occur, look for the next most acceptable alternative for both parties.

3. Avoid changing your mind "only" in order to avoid conflict and to reach agreement and harmony. Withstand pressures to yield which have no objective or logically sound foundation. Strive for enlightened flexibility; avoid outright capitulation.

4. Avoid conflict-reducing techniques such as majority vote, coin flipping, and the like. Treat differences of opinion as indicative that htere is an incomplete sharing, of relevant information on someone's part and press for additional sharing, either about the task or emotional data, where it seems in order.

5. View differences of opinion as both natural and helpful rather than as a hinderance in decision making. Generally, the more ideas expressed, the greater the likelihood of conflict will be; but the richer the array of resources as well.

6. View initial agreement as suspect. Explore the reasons underlying apparent agreement; make sure that people have arrived at similar solutions either for the same basic reasons or for complementary reasons before incorporating such solutions in the group decision.

In addition, a written summary of the above remarks was given to each subject in the "consensus" condition, and subjects were requested to re-read the instructions before beginning group discussion of the Lost at Sea exercise.

Nominal Condition. Groups in the "nominal" condition were given the following instructions:

The following list of instructions is designed to help your group work effectively by using what is known as the "Nominal Technique" of decision making. Please try to adhere to the guidelines listed below.

1. Once you get to your rooms, each of you will present your rankings to the rest of your group individually. As the presentations are made, please do not discuss your decision (rankings) with other group members. Someone should list the items from the decision form on the board and then one at a time, a member will enter his respective rankings. Please do not erase your rankings from the blackboard. Each member will give a brief (5 minutes or less) rationale for his rank orderings, trying to state the most important factors that influenced his rankings. Again, while a group member writes his rankings on the board and discusses them, there should be no talking

by the other members. In other words, only one person is to be talking at a time, and only while he is giving his presentation. Also, while giving your rationale, do not discuss the rationales of the other members who have presented theirs before you.

2. After all members have had the opportunity to present their rankings there will be a period of open group discussion. In other words, all members will now be able to discuss their rationales with each other in an open forum format. After this open discussion, fill out individually another copy of the decision form, taking into account any new information you consider to be important to you that you have gained from listening to the other group members. Do not talk with others while you fill out "copy 2".

3. When everyone has completed "copy 2" someone in the group should collect "copy 2" from all members. He should add up all of the responses for each decision item on the Lost at Sea form. For example, if the item labelled "sextant" was ranked #1 by one group member, #10 by another, #5 by another, and #15 by another then the total sum for the sextant would equal 31. This procedure should be performed for each of the 15 items. Then on either a sheet of paper or on the blackboard, list the sums for each item with the lowest total number of points first. Then list the sum for the item with the next most points and so on for all 15 items. The item with the lowest

total points now represents your group's choice for the most important item, the item with the second lowest total the second most important and so on through the 15 items, with the item with the largest total points representing the least important item according to your group decision. Be certain everyone in the group gets to see this final ranking before filling out the questionnaires.

Again, subjects were given written copies of the above remarks and asked to re-read the instructions before beginning the task.

Control Condition. Subjects in the conventional interacting group did not receive any of the additional information presented above and were left to their own devices in arriving at group decisions. Other than this, all procedures were identical for the control and experimental groups.

Groups in each condition received their instructions away from groups in other conditions, and each group worked alone on the task in separate rooms.

Observers were assigned to 85% of the groups. In the consensus and control conditions, they were asked to fill out an "observer rating form" which included five 9 point, Likert-type questions. The five questions were designed to assess 1) the frequency with which majority vote was utilized by the group; 2) the frequency with which group members resorted to averaging of rankings in resolving differences; 3) the frequency of trading which occurred in the group; 4) the extent to which one person dominated the discussion, and 5) the extent to which all members were able to fully discuss their

views when disagreements occurred. These observers were given brief lecturettes on the differences between various decision modes frequently utilized by groups faced with a decision task. In addition, the observers recorded the time taken by the groups in reaching their final decisions and also administered a 19 item Likert-type questionnaire to be completed individually by each group participant. Fourteen of the questions were designed to assess subject reactions in terms of satisfaction with their group's decisions, satisfaction with their self-performance, and perceived group effectiveness. The remaining five questions were identical to those on the observers forms and were designed to determine the degree of congruence between self reports and observer ratings concerning styles of decision-making by the group. Both the observer and self reports served as manipulation checks for the interventions.

Observers in the nominal condition, due to the structured nature of the technique, did not fill out an "observer rating form". They did answer questions which the groups may have had concerning the technique and also kept track of time and administered a participant questionnaire, which was composed of the first 14 items of the above-mentioned 19 item instrument.

RESULTS

As a manipulation check on the effectiveness of the instructions given to the consensual interacting groups, t-tests were computed for observer rating responses and subject questionnaire responses. For the observer responses, there were significant differences between consensus and conventional interacting groups on two questions:

1) the frequency with which majority vote was utilized by the group in reaching its decisions; and 2) the degree to which all members of the group were allowed to fully present their views when disagreements occurred. On three other questions dealing with the group process, the responses of the observers tended to confirm the instructions, although these findings were not significant at the .05 level. The results for the observer questions are presented in Table 1.

Insert Table 1 Here

For the subject responses to the same questions, there were significant differences between the consensus and conventional interacting groups on three questions: 1) the frequency with which majority vote was utilized by the group in reaching its decisions; 2) the frequency with which group members resorted to averaging of rankings in resolving differences; and 3) the frequency with which group members resorted to trading in order to resolve differences. On the other two questions, the results again tended to confirm the instructions although the differences did not reach the .05 level of significance. The results for the subject responses are presented in Table 2.

Insert Table 2 Here

These results indicate that conventional interacting groups resort to decision styles of majority vote, averaging, and trading significantly more than do consensus groups. Also, conventional interacting groups tend to be dominated more often by one group member than do consensus instructed groups. It is reasonable to assume that these differences were promoted by the instructions, and hence that examination of the experimental results is in order.

Performance

Decision Quality. The subjects' responses to the Lost at Sea exercise are, in essence, a rank ordering of standard items. Therefore, both individual and group responses can be compared to the objectively correct rank orderings which were supplied by officers of the Merchant Marines.

Decision adequacy was determined by summing absolute deviations between subject rankings and the correct ranking for each of the 15 items, resulting in an error score, the magnitude of which is inversely related to decision quality. Error scores on the Lost at Sea exercise can vary from 0 (absolute accuracy) to 112. Table 3 presents the mean error scores for all groups and individuals in summary form.

Insert Table 3 Here

A 2 X 3 factorial analysis of variance performed on the group decision scores revealed a significant ($p < .01$) main effect for both the group tradition ans structural intervention factors. For the group tradition factor, it was found that ad hoc groups performed significantly better than the established groups on the decision task ($F = 9.32$, $df = 1/42$, $p < .01$). A Newman Keuls test was performed on the three levels of the structural intervention factor. This test revealed that both the nominal and consensus group decisions were significantly better than the decisions of the conventional interacting groups ($p < .05$) but did not significantly differ from one another. Table 4 summarizes the analyses of variance performed on the dependent variables of decision quality, quality gains over the average individual score, and time.

Insert Table 4 Here

Utilization of Average Resources Index. Mean individual scores, prior to any group interaction, have frequently been used as the base line by which group decisions are evaluated [7], [11]. Gain or loss in quality of the final group score, when compared with the average individual score, reflects the extent to which the group effectively utilized its resources in arriving at a group decision. In addition, this measure is equivalent to an analysis of covariance in which the pre-discussion resources of the groups are held constant [3], so that it is a most appropriate indicator of experimental effects.

A 2 X 3 analysis of variance performed on the data revealed significant main effects for both the group tradition factor ($F = 6.10$, $df = 1/42$, $p < .05$) and the structural intervention factor ($F = 6.48$, $df = 2/42$, $p < .01$). In particular, ad hoc groups utilized the group resources significantly better than established groups. A Newman Keuls test was performed on the three levels of the structural intervention factor, revealing that groups using the consensual technique achieved significantly greater gains ($p < .01$) than conventional interacting groups. The consensual groups did not differ significantly from the nominal groups in this respect, nor did the nominal groups differ significantly from the conventional interacting groups. While hypothesis 1 is supported for the consensual groups, conventionally accepted levels of significance ($p < .07$) were not obtained for the nominal groups. It is suspected that if a larger number of groups had been run in the experiment, hypothesis 1 would have been supported for the nominal groups as well.

Assembly Effect Bonus. For purposes of this study, the assembly effect bonus will be said to have occurred when the decision reached by the group surpasses in quality its most accurate group member's decision. Groups achieving the assembly effect bonus are assigned a value of 1, while those who do not are assigned a value of 0. The percentage and proportion of groups achieving the assembly effect bonus are also shown in Table 3. Using a one-tailed test for significance of difference between two proportions [1], it was found that while consensus groups differed significantly from conventional interacting groups, consensus groups did not significantly differ from groups in the nominal condition nor did the nominal groups differ significantly from the conventional interacting groups.

Group Member Attitudes

Group members responded to 14 items on a post experimental questionnaire designed to assess their reactions in terms of satisfaction with their group's decision, satisfaction with their own performance, and their general attitudes toward the experiment. The responses to these questions were analyzed using the analysis of variance technique.

Quality of the Group's decision. Analysis of the responses to the question which asked how good the subjects thought their group's decision was revealed a main effect for the structural intervention factor ($p < .05$). A newman Keuls analysis revealed that members of consensual groups thought their group's decision was significantly better than subjects in the conventional interacting groups ($p < .05$).

No differences were apparent between the consensus and nominal or nominal and conventional interacting groups.

Satisfaction with performance. Analyses of the responses to questions which asked how satisfied subjects were with the quality and quantity of their participation again revealed a main effect for the structural intervention factor ($p < .05$). A Newman Keuls analysis revealed that on both questions, subjects in the consensual condition felt more satisfied with their own participation than did subjects in the conventional interacting groups ($p < .05$). No differences were apparent between subjects in either the consensus and nominal or nominal and conventional conditions. The same pattern of results was obtained for answers to the question which asked subjects how satisfied they were with their own performance in general.

Nervousness. The only other question which yielded a significant effect was that which asked the subjects how nervous they felt during the group session. In this case, a main effect was indicated for the group tradition factor ($p < .05$), revealing that subjects in established groups felt significantly more nervous than subjects in ad hoc groups. The authors believe that this effect was due to the unlearning process which established groups experienced when working under new methods of decision making. Since ad hoc groups had not worked together previously using any technique, the learning of the consensual and nominal methods created no strain on established group relations as in the established condition.

Taken together, these results indicate some support for the second hypothesis.

Time

The time actually taken to accomplish the group task was recorded for each group and analyzed using the analysis of variance technique. This analysis revealed significant main effects ($p < .01$) for both the group tradition and structural intervention factors as well as a significant ($p < .05$) interaction between the factors. In particular, for the group tradition factor, ad-hoc groups needed significantly less time than established groups to complete the decision task ($F = 9.32$, $df = 1/42$, $p < .01$). A Newman-Keuls test was performed on the three levels of the structural intervention factor, revealing that nominal groups needed significantly less time than either the consensual or conventional interacting groups to complete the task ($p < .01$) and that the consensual and conventional interacting groups did not significantly differ in this respect. A Newman Kuels test was also performed on the data to indicate the location of the interaction effect, which is diagrammed in Figure 1.

This analysis revealed that in the ad hoc condition the nominal groups needed less time to complete the task than either of the other groups ($p < .01$) but that the consensus and conventional interacting groups did not differ significantly in this condition.

In the established condition, on the other hand, nominal groups did not differ significantly from the control groups in the amount of time needed to complete the task, but consensus groups took significantly more time than either the control ($p < .05$) or the nominal ($p < .01$) groups. These results strongly support the third hypothesis, In addition, the results suggest that established groups find the consensus technique a deviant way to operate given their traditional norms for decision-making. This was not true for the ad hoc groups, since they did not have to unlearn old ways of interacting.

DISCUSSION

The first hypothesis posited in this study suggested that both the nominal and consensual approaches develop processes in the group setting which engender a fuller utilization of the resources in the group and consequently promote better quality decisions than are generally obtained in conventional interacting groups. A comparison of observer and subject questionnaire data clearly supported this stance for groups in the consensual condition. In particular, consensual groups used less majority voting, trading, and averaging in reaching their decisions than conventional interacting groups. Also, consensual groups were less likely to be dominated by one member and more likely to allow the full presentation of views when disagreements occurred. The result of these superior group decision making modes in the consensus condition was significantly better performance on the decision task than conventional groups. In addition, members of groups in the consensual condition tended to be more satisfied with both their own and their group's performance than members of groups in the conventional interacting condition. These gains in decision efficacy were apparently achieved without sacrificing actual time spent on the decision-making process. Overall, consensual groups did not differ significantly from conventional interacting groups in the amount of time needed to reach a group decision. This supports similar findings by Hall and Williams [8] and Hall and Watson [6]. This finding should be qualified, however, by mention of the interaction effect which took place with the group tradition factor. While the time needed to reach a decision by consensual and conventional interacting groups

did not differ in the ad hoc condition, in the established condition consensual groups required significantly more time than conventional interacting groups. Thus, the group tradition factor may account for the discrepancy between the findings of the Hall, et al research and research conducted by Nemiroff and King [11]. It is thought that the latter finding is indicative of the unlearning process which established groups must undertake before they can successfully employ a new type of decision process. One may speculate that once the consensual technique is learned by the established groups the time taken by established and ad hoc groups using the technique would be comparable.

While hypotheses 1 and 2 are clearly supported for the consensual groups, the findings are not as clear for groups utilizing the nominal technique. The effect of the technique on group efficacy was not quite as strong as that produced by the consensual intervention. In fact, the nominal technique was found superior to the conventional interacting technique in terms of performance only on the measure of group decision quality. On all other measures of performance and satisfaction, the nominal groups did not differ significantly from either the consensual of the conventional interacting groups. Nevertheless, the findings quite clearly indicate that the nominal groups needed significantly less time than either the consensual or conventional interacting groups to reach their decision.

The nominal technique would seem, therefore, to be particularly well suited to situations in which time is a critical factor and the quality of the group decision desired is high but not optimal. The consensual technique, while consuming more time, apparently is better suited to situations in which decision quality is crucial. Either technique would appear to yield results better than those obtained by conventional methods on this type of decision task.

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FOOTNOTES

1. The authors would like to thank George P. Huber for his critical comments on an earlier draft of this manuscript..

TABLE 1

Means, Differences Between Means, Estimates of the Standard Error of the Differences Between Means and t Ratios for Observer Responses to Questions 1) frequency of majority vote; 2) frequency of averaging of rankings in resolving differences; 3) frequency of trading occuring in the group; 4) the extent to which one group member dominated the discussion; and 5) the extent to which all group members were allowed to fully present their views when disagreements occurred.

	Q1	Q2	Q3	Q4	Q5
Consensus	3.31	2.13	2.88	4.00	7.80
Conventional	7.55	3.11	4.00	5.22	6.33
Difference	4.24	.98	1.12	1.22	1.48
Estimate of Sdiff	.958	.847	.900	1.09	.398
t Ratio	4.42**	1.16	1.24	1.12	2.35**

*p < .05

**p < .01

TABLE 2

Means, Differences, Between Means, Estimates of the Standard Error of the Difference Between Means and t Ratios for Subject Responses to Questions 1) frequency of majority vote; 2) frequency of averaging of rankings in resolving differences; 3) frequency of trading occuring in the group; 4) the extent to which one person dominated the discussion; and 5) the extent to which all group members were allowed to fully present their views when disagreements occurred.

	Q1	Q2	Q3	Q4	Q5
Consensus	3.72	2.56	3.34	4.61	7.73
Conventional	5.54	3.66	4.43	4.91	7.66
Difference	1.82	1.10	1.09	.30	.07
Estimate of Sdiff	.50	.46	.53	.41	.29
t Ratio	3.64**	2.39**	2.06*	.73	.24

*p < .05

**p < .01

TABLE 3

Summary Data of Means for Decision-Making Performance Creteria

Condition	Before Group Discussion		After Group Discussion			
	Mean Error Score of Group Members	Error Score of Most Accurate Group Member	Group Error Score	Gain-Loss over Mean Error Score of Group Members	Percentage and Proportions of Groups Achieving Assembly Effect	Time in Minutes
Ad-Hoc (A1)	58.93	45.94	45.22	11.29	9/24=37.50%	22.52
Established (A2)	62.75	52.37	54.39	5.81	7/24=29.27%	27.56
Consensus (B1)	58.94	45.39	45.39	13.56	9/18=50.00%	28.22
Nominal (B2)	63.33	51.33	47.44	8.32	6/18=33.33%	19.39
Conventional (B3)	60.25	50.75	56.58	3.78	1/12=8.33%	27.50
A1B1	54.81	38.11	38.67	15.94	4/9-44.44%	24.44
A1B2	63.94	51.56	44.67	11.81	4/9=44.44%	14.78
A1B3	58.25	48.17	52.33	6.13	1/6=16.67%	28.33
A2B1	63.28	52.67	52.11	11.17	5/9=55.56%	32.00
A2B1	62.72	51.11	50.22	4.83	2/9=22.22%	24.00
A2B3	62.25	53.33	60.83	1.42	0/9=0.00%	26.67

TABLE 4

Summary of F Ratios fo Decision-Making Performance Variables

Condition	df	Group Error	Gain-Loss of Group Over Mean Resource	Time in Minutes
Group Tradition (A)	1	9.32**	6.10*	9.32**
Structural Intervention (B)	2	5.25**	6.48**	11.79**
A X B	2	.59	.11	4.21*
Within	42			

*p < .05
**p < .01

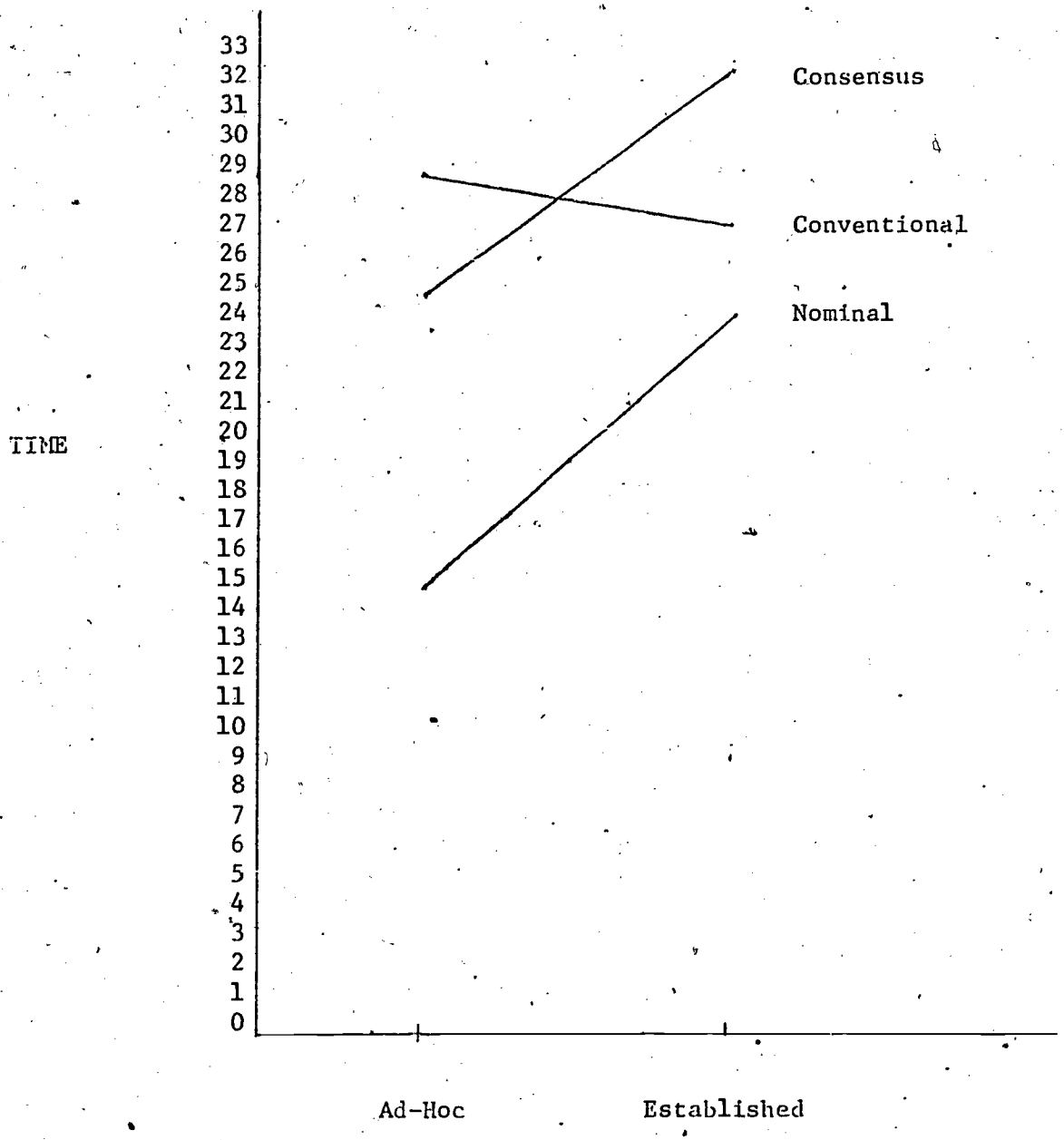

Figure 1: Profile of Cell Means of Time Taken To Complete the Decision-Making Task Indicating Interaction Effect.

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