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*This study compares decision processes of consensus and devil's advocacy within an additive task, a disjunctive task, and a conjunctive task structure. The results suggest that high-conflict decision processes such as devil's advocacy enhances decision making in disjunctive tasks, retards decision making in additive tasks, but has no effect on decision making in conjunctive tasks. Perceptions of the group's atmosphere were most positive within consensus groups.*

## **Consensus Versus Devil's Advocacy: The Influence of Decision Process and Task Structure on Strategic Decision Making**

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**R**esearch on communication within decision-making groups has assessed the impact of face-to-face versus mediated communications on decision quality and communication style (Smeltzer, 1992). The research has generally concluded that face-to-face communication is not superior to communication media such as electronic mail, video conferences, and audioconferences (Chapanis, Parrish, Oshman, & Weeks, 1977). An exclusive focus on media, however, overlooks the influence of task structure and decision process on group communication.

The present study compares two decision processes: consensus, a low-conflict process, and devil's advocacy, a high-conflict process, within three types of task structures: additive, disjunctive, and conjunctive. This research addresses three questions: (a) How does the interaction of task structure and decision process affect the performance of strategic decision makers? (b) When is a high-conflict approach a more useful tool than a low-conflict approach for strategic decision making? and, (c) What are the effects of task structure and decision process on group atmosphere?

Strategic decision making is an organizational process which can be significantly influenced by the structure of information and the decision method. The strategic decision literature has focused primarily on the extent to which high- and low-conflict processes inhibit or enhance top-management team communication and decision making. Strategy researchers have theorized that the complexity and non-routine nature of the decision task (Mintzberg, Raisinghani, & Theoret, 1976) require a system of formal conflict and debate (Schwenk, 1989; Schwenk & Cosier, 1980). Through formal, sanctioned conflict and debate, ideas and assump-

tions are systematically evaluated and challenged (Mason & Mitroff, 1981). This theory explicitly assumes that formal conflict will bring hidden information to light, enhance group communication, and expose flaws in strategic plans. Without these high-conflict processes, groups tend toward "groupthink" (Janis, 1972) or the desire to pursue conformity within a group rather than find the optimal decision. Conformity pressures and conflict minimization result in less information sharing, poorer communication, fewer challenged assumptions, and sub-optimal decisions, yet cohesion and satisfaction remain high.

Proponents of consensus decision making, a low-conflict process, argue that the formal critiques required by high-conflict processes may inhibit communication. Some group members may be uncomfortable with high-conflict processes and choose to limit their contributions to the group (Cosier & Alpin, 1980). The required criticism may also reduce the satisfaction of group members with the decision or reduce the probability of successful implementation (Schweiger, Sandberg, & Ragan, 1986).

Research in consensus decision making suggests that more information will be shared if people work in a low-conflict, cooperative group (Leana, 1985). Group members are more comfortable sharing information when they feel their ideas will be heard and when they do not feel overly criticized by other group members (Stasser & Titus, 1985). This cooperative group atmosphere can lead to enhanced communication and more creative solutions to problems, and it provides the basis of approaches such as Nominal Group Technique, Delphi Technique, and Brainstorming (see Diehl & Stroebe, 1987).

Much early work on decision processes in strategy focused on the comparative value of two high-conflict processes, devil's advocacy (DA) and dialectical inquiry (DI) (Cosier, 1980; Schweiger & Finger, 1984; Schwenk, 1989; Schwenk & Cosier, 1980), but has been inconclusive in determining which technique is more effective (Schweiger & Finger, 1984; Schwenk, 1989). Other work has evaluated the success of group decision making using consensus versus either DA or DI (Schweiger & Sandberg, 1988; Schweiger et al., 1986). This latter work indicates little difference in decision quality between the two high-conflict approaches, but it shows that groups using either DA or DI generally produce better decisions than groups using consensus (Schweiger & Sandberg, 1988; Schweiger et al., 1986).

While strategy research continues to improve the field's understanding of group decision making, the scope of the research focuses primarily on the *process* by which groups evaluate information and reach a decision. A stream of research concerning the *structure* of the decision task has

received less attention. Within the social psychology literature, Steiner (1965, 1972) and others (Littlepage, 1991; Michaelsen, Watson, & Black, 1989; Zaccaro & Lowe, 1988; Zaccaro & McCoy, 1988) have suggested that the productivity and success of a group depends both on the nature of the group's task and the coordination patterns developed as the group pursues its task.

Steiner (1972) identified three types of task structures typically imposed upon groups: additive, disjunctive, and conjunctive. In an *additive* task, group performance is determined by the aggregation of individual effort. Each group member has similar responsibilities and information. No one member is responsible for developing an optimal solution. The group must work together as a team to reach the best decision. In an additive task, each group member must maximize his or her own individual performance to maximize the overall group effort. According to Zaccaro and Lowe (1988), successful completion of additive tasks requires that group members coordinate individual effort and minimize interactions that may distract or interfere with the completion of the task.

In a *disjunctive* task, a group must select one optimal solution from an array of solutions championed by individual group members (Littlepage, 1991; Steiner, 1972). Individual group members suggest alternatives and the group as a whole decides which alternative is best. For successful group performance, the following conditions must be met: (a) the member (or members) with the ability to solve the problem must do so and then announce the solution to the group; (b) the member (or members) must then defend the solution; and, (c) the group must be able to find, recognize, and accept the superior contributions of an individual solution to the exclusion of all others (Littlepage, 1991; Steiner, 1972).

Steiner (1972) defines a *conjunctive* task as one in which the success of the group depends on the individual contributions of each group member. Conjunctive tasks differ from additive tasks because each group member has different information. The success of the group depends on accurate and timely communication between group members. Conjunctive tasks differ from disjunctive tasks because no one group member has enough information to suggest the correct answer or optimal result. A group achieves a successful outcome only when all of the information held by individual group members is accurately communicated to other group members.

Arguably, strategic decisions, because of their non-routine nature, could fit into any of the three categories. For example, an acquisition decision made by a group may be structured differently in various

organizations. In one organization, the acquisition may be structured like an additive task with all group members receiving information about possible acquisition targets, perhaps from a consultant or an ad hoc committee. Each group member then evaluates the information and communicates his or her opinion to the rest of the group so the group can work together to select the best acquisition possibility.

In another organization, the acquisition decision may resemble a disjunctive task. Each group member identifies his or her primary acquisition target and communicates his or her opinion. Thus, the individual group member must convince the other members that his or her suggestion is the optimal one.

In yet a third type of organization, the acquisition process may resemble a conjunctive task. One member of the group may examine the financial implications of various alternative acquisition targets. Another group member may evaluate the legal ramifications of the acquisition. Other members may have specific knowledge of distribution and production problems related to the acquisition alternatives. No one group member has all the information needed to make the optimal decision. Only if all members effectively communicate their unique information to the group could the group possibly identify the optimal solution.

Not only will decision task structures vary across organizations, but the task structure of different types of strategic decisions may vary within an organization as well. An acquisition may be additive, a strategic human resources decision may be disjunctive, and a decision concerning global expansion could be conjunctive. If strategic task structures vary across as well as within organizations, the concept of task structure in any evaluation of strategic decision making could more fully explain how and why some decision teams make effective versus ineffective strategic decisions.

## HYPOTHESES

This study attempts to integrate the concepts of task structure and decision process. Previous research on task structure suggests that different types of tasks influence how groups such as top management teams share information and communicate. The strategic decision-process literature debates the merits of consensus versus DA in sharing information and making conclusions based on that information. Both the structure of the decision and the decision making process influence group effectiveness, the decision quality, and overall atmosphere within the group. So this study examines the interaction of these two dimensions by testing the following hypotheses:

- H1:** When engaged in an additive task, decision groups which use consensus will perform better than groups using devil's advocacy.

In additive tasks, all group members have the same information. No pre-determined position is advocated by any group member. Formal conflict is not necessary to elicit hidden information. A high-conflict decision process such as devil's advocacy may create a hostile environment that directly contradicts the essential components of an additive task structure. A low-conflict consensus approach should facilitate cooperation and sharing of information within an additive task structure. Consensus should help the group maximize the contributions of each individual group member and minimize distracting or dysfunctional interactions between group members.

- H2:** When engaged in a disjunctive task, decision groups which use high-conflict processes such as devil's advocacy will perform better than groups using a consensus process.

When engaging in a disjunctive task, the group as a whole must select one alternative among multiple proposals put forward by group members. Though all members have the same information, the ability of each individual to evaluate, defend, and critique that information is essential to the success of the group. Imposing formal, high-conflict processes on this task structure should clarify the assumptions, strengths, and weaknesses of each individual proposal. A consensus process would be less effective because the merits of each individual proposal would not be fully explored. Thus, in a disjunctive task, a consensus process may exacerbate tendencies toward conformity and "groupthink."

- H3:** When engaged in a conjunctive task, consensus and high-conflict processes are equally effective.

The nature of a conjunctive task is such that eliciting information from group members is a high priority. A low-conflict group context created by the consensus process may be beneficial in creating an atmosphere in which all group members feel that their contributions are important and acceptable. Consensus processes may enhance participation by group members, generate more sharing of information and, thus, lead to effective decisions.

Similarly a high-conflict process such as devil's advocacy should equally stimulate the sharing of information within a conjunctive task group. High-conflict processes should result in better evaluation of the information because group members will provide a rigorous critique. Better evaluation of the information through the high-conflict process should also lead to effective strategic decisions. Thus, conjunctive tasks because of their demand for integration and coordination should override the impact of decision process on decision making effectiveness.

**H4:** Regardless of the task structure, decision groups using consensus will have more favorable evaluations of the group's atmosphere than decision groups using devil's advocacy.

Groups report feeling more comfortable and satisfied with the group when a consensus process is used (Stasser & Titus, 1985). The formal critique methods used by the devil's advocacy approach may inhibit some group members and make them feel uncomfortable. The required conflict and resulting group tension should have a negative impact on the overall group atmosphere.

Because there is not a priori rationale to suggest the interactive effects of task structure and decision process on group atmosphere, no specific hypothesis is offered.

## METHODS

Participants were 101 full time Masters of Business Administration (MBA) students at the University of Pittsburgh whose participation fulfilled an optional course assignment. The mean age of participants was 26.4 years. Sixty-one participants were male and forty were female. Previous work experience ranged from one to eleven years, suggesting that participants, in general, had experience in the work environment. Locke (1986) suggests significant overlap between experimental research using experienced student populations and field studies of actual group decision making. Thus, the participants should be somewhat representative of organizational decision makers. Aronson, Ellsworth, Carlsmith, and Gonzales (1990) have suggested that external validity depends greatly on experimental realism. Thus, simulations are valid tools to the extent that they capture the underlying meaning of the natural setting they are attempting to reproduce. Our participants became quite involved in this simulation, which applied many of the concepts addressed during class discussions.



## Procedures

The study was conducted during a regularly scheduled class meeting in a semester-long course on organizational behavior. Students were told that they would be participating in an optional class exercise on group decision making. Though the study was conducted during a regularly scheduled class meeting, the assignment was optional. Fifteen experiential exercises were offered in the course. Students were required to participate in ten exercises. Thus, students were not required to participate in this particular exercise. Subjects were randomly assigned to one of six experimental conditions in four to five person groups. Each participant was given an information packet that contained all materials, measures, feedback, and response sheets. Subjects were then told that they would be role-playing the part of a member of a top-level strategic decision-making team involved in selecting a new group product manager from a set of available candidates.

The selection of the group product manager was a strategic decision in the sense that the selection of a division-level manager is often the responsibility of the general manager, the CEO, or the top management team. This type of decision may be considered more routine than in some strategic decision exercises; however, the goal of the research was to use a decision which would easily lend itself to manipulation of information and responsibilities within the groups.

As participants reviewed the general instructions, one experimenter read aloud an abbreviated version of the same instructions and answered any questions from participants. After students read the initial instructions, they were given background information about the organization, a description of the task of selecting a group product manager, and a job description for the available position. They were then given more specific information about each candidate and were provided guidelines for their upcoming group discussion. In groups using high-conflict decision process, a group member was required to play the role of devil's advocate. This role was randomly assigned by a special code that was placed on one group member's information packet. To make sure that each participant fully understood the group discussion technique to be used, each participant completed a short test to check his or her comprehension of the discussion procedures.

After determining that the discussion procedures were clearly understood, each group was given information for each of the three candidates: resumes, performance evaluations, security reports, and work history. Students were given fifteen minutes to review this material and to individually rank the three candidates. After completing their individual



rankings, subjects were given twenty minutes to discuss the best solution to this strategic decision according to the guidelines for group discussion provided earlier. Each group recorded its group ranking on a separate form and also indicated the rationale for the group's decision. After completing the group discussion and ranking of the three candidates, each participant provided evaluations of the group performance, the group atmosphere, and rated the group across several adjective traits.

### **Description of the Decision Task**

The decision task was adapted from *The Management Game* developed by Burst and Schlesinger (1987). The task was presented as a scenario and was similar to cases used in many MBA classes. The candidate information, however, was provided using a more realistic format. The complexity of the materials demanded more attention and analysis than shorter case study tools. In addition, the exercise was selected because Burst and Schlesinger (1987) provided an expert solution to which the group's decision could be directly compared.

The management game involves a fictitious commodities company, Consolidated Commodities, Inc. (ConCom) that recently created a new specialty foods division. The specialty foods division targets consumers of gourmet foods and concentrates on promoting a new line of Italian imported food products. Participants were asked to assist ConCom, Inc. in selecting a group product manager for the new division. Groups were given information about the corporate entity, the gourmet foods division, and a job description for the new product manager. The individual would be responsible for strategic product development and policy implementation for all products within the specialty foods division. Specific duties of the product manager would include marketing plan development, implementation of product and packaging development, and coordination of activities between sales, production, and advertising divisions.

### **Experimental Manipulations**

Two forms of group decision process were manipulated: consensus and devil's advocacy. Subjects were given an overview of each decision-making process. Instructions taken directly from Schweiger, Sandberg, and Ragan (1986) described either the process of decision making by consensus or by using a devil's advocate. Each of the two descriptions provided seven techniques for enhancing group consensus or for acting in the role of devil's advocate. In both cases, the groups were required to use unanimity rather than majority as the decision rule.

Three types of task structures were manipulated by defining group member roles and responsibilities concerning division and sharing of information. These structures were taken directly from the typology developed by Steiner (1972). Four pieces of information were provided to the group about each candidate: a resume, a work history, a confidential report, and a performance evaluation. In the additive task structure, each group member received all four pieces of information, ranked the three candidates individually, and was asked to discuss the decision and to help determine the group ranking. Thus, the group ranking depended on the combined inputs from the individual group members. In the disjunctive task, each group member received all four pieces of information, ranked the candidates individually, but was told that the group was to decide which individual member's ranking was optimal. Thus, the group ranking or solution depended on a solution provided by an individual group member.

In the conjunctive task structure, each group member received only one type of information about each of the three candidates. For example, one group member received all of the resumes for the three candidates while another received all of the confidential reports for the three candidates. Each group member was told that since there was a limited amount of time to discuss this problem, his or her initial task was to become an "expert" on the information and present that information to the group. After all the information had been presented, the members decided on one group ranking for the three candidates. Thus, the group ranking depended on the contributions of all of the members and each member provided a unique part of the final group solution.

In each task structure, subjects were told to use a consensus or a devil's advocate approach. For example, in the conjunctive/consensus condition, each group member received one type of information for each candidate and then presented that information to the group. After discussing the information in an open and constructive manner, all group members were required to come to agreement on the preferred rankings of the candidates. In the conjunctive/devil's advocate condition, a single group member was assigned the role of the devil's advocate. This individual developed arguments and criticisms of the recommendations developed by the group. The final group ranking was ultimately accepted by all members, including the devil's advocate.

## Measures

### Decision Accuracy

For the final group decision, the ranking of the three candidates was compared to the ranking given by Burst and Schlesinger (1987). To measure decision accuracy, the group ranking was individually compared to Burst and Schlesinger's (1987) optimal ranking for each candidate. A group received one point for each position assignment given to each of the three candidates that matched those outlined by Burst and Schlesinger (1987). The total possible score for each group was three points. Higher scores indicated more accurate group position rankings.

### Decision Quality

To measure decision quality, the overall rank ordering for the solution provided by the group was evaluated. Each of the six possible rank orderings of the three candidates was ordered in terms of most to least preferred based on the goals and objectives described by Burst and Schlesinger (1987). The most preferred rank ordering was assigned a score of six points and the least preferred rank ordering was assigned a score of one point. Intermediate rankings were assigned points ranging from two through five. Higher scores indicated higher decision quality.

### Evaluations of Group Atmosphere

A fifteen-item index was included to measure overall perceptions of the group atmosphere. These items, taken directly from Gaertner, Mann, Murrell, and Dovidio (1989), measured whether members evaluated the group favorably in terms of being satisfied with the group's atmosphere, being proud of the group's performance, and wanting to work with members of the group on a task in the future. Examples of these items are: "Overall, I was comfortable with this group's atmosphere"; "Overall, I am satisfied with this group's performance"; and "I would enjoy working with all of these people in the future." The overall alpha coefficient was .92, indicating high internal consistency in subjects' ratings of the group atmosphere. A composite score for ratings of the group atmosphere was computed by averaging subjects' responses across the fifteen ratings.

## RESULTS

Scores for the *decision accuracy* index for the final group solutions were analyzed using a 2 (decision process: consensus, devil's advocacy) x 3 (task

structure: additive, disjunctive, conjunctive) fully-factorial between subjects design. These results are summarized in Table 1.

In terms of accuracy of the group solution, a two-way interaction was obtained,  $F(2, 95) = 13.62, p .001$ . Planned comparisons revealed that group accuracy was significantly higher for consensus than devil's advocacy in the additive task structure  $t(1,95) = 4.96, p <.001$ ; but, group accuracy was significantly lower for consensus than devil's advocacy within a disjunctive task structure,  $t(1,95) = 2.27, p <.025$ . Consensus versus devil's advocacy did not differ for groups performing a conjunctive task (see Table 1). Thus, consistent with our hypotheses, high-conflict decision processes enhanced decision making within a disjunctive task, retarded decision making in an additive task, and had no effect on decision making within conjunctive tasks.

Results for the *decision quality* measure yielded a significant main effect for task structure,  $F(2,95) = 10.86, p <.001$ . Groups working on an additive task ( $M=3.69$ ) performed significantly better than groups performing either a disjunctive ( $M = 2.50$ ) or a conjunctive ( $M=2.52$ ) task.

A two-way interaction was observed for the group quality index,  $F(2,95) = 15.16, p <.001$ . Planned comparisons indicated that for an additive task, consensus enhanced decision quality,  $t(1,95) = 5.05, p <.001$ ; but within a disjunctive task structure, groups using consensus were lower in quality than groups with a devil's advocate,  $t(1,95) = 2.69, p <.008$ . Within the conjunctive task, however, groups with a devil's advocate were as high in

**Table 1**  
**Observed Means for Group Performance**  
**and Atmosphere Measures**

Task Structure and Decision Process							
Measures	Additive		Disjunctive		Conjunctive		F-value
	CON	DA	CON	DA	CON	DA	
Quality	4.60	2.56	1.94	3.00	2.67	2.33	15.61**
Accuracy	1.10	0.00	0.11	0.60	0.27	0.25	13.62**
Atmosphere	5.24	5.51	5.73	5.03	5.87	5.46	3.95*

*Note.* CON indicates consensus decision process condition; DA indicates devil's advocacy decision process condition; F values are indicated for two-way interaction effect.

\*  $p < .05$ ; \*\*  $p < .001$ .

quality as groups employing a consensus process (see Table 1). These findings supported our hypotheses.

The composite ratings for the items measuring the *group's atmosphere* were subjected to a 2 (decision process)  $\times$  3 (task structure) analysis of variance. The interaction of task structure and decision process for ratings of the group atmosphere was significant ( $F(2,95) = 3.95, p < .03$ ). These results are summarized in Table 1. Comparisons revealed that for disjunctive tasks, individuals using consensus ( $M = 5.73$ ) rated the group atmosphere more favorably than individuals exposed to a devil's advocate ( $M = 5.03$ ). For individuals reaching consensus, a conjunctive task structure ( $M = 5.87$ ) produced more favorable ratings of the group atmosphere than an additive task structure ( $M = 5.24$ ).

## DISCUSSION

Both the contribution and the potential implications of the current work concern the "fit" between decision process and task structure on decision making effectiveness. Our results indicate that for measures of decision accuracy, low-conflict processes such as consensus are more effective with an additive task structure. High-conflict processes such as devil's advocacy are more effective with a disjunctive task structure. High-conflict and low-conflict decision processes are equally effective within a conjunctive task structure. This suggests that paying attention only to task structure or only to decision process may limit understanding of group communication and decision making.

More specifically, when task structure involves determining the best decision from several proposals presented by individuals within the decision team (a disjunctive task), a devil's advocate may prevent the group from selecting an alternative and reaching consensus. The DA requires the group members to critically examine all information prior to making a decision.

When the task structure requires cooperation and coordinated effort from all team members the consensus process reinforces the additive task structure. The consensus process encourages all group members to contribute to the group solution. Low-conflict processes enhance the sharing and coordination of information, increase satisfaction within the group, and produce more effective decisions.

When task structure produces individualized, yet interdependent task roles (a conjunctive task), the type of decision process (consensus or devil's advocacy) becomes irrelevant. The required interdependence of the conjunctive task creates conflicting needs within a group. Because each

member has important information, cooperation and coordination among group members is critical to the success of the task. Low-conflict processes can provide the atmosphere which facilitates the exchange of information and improves the quality of the decision. Simply sharing and coordinating information, however, is not enough. An efficient group must rely on the individual's interpretation of his or her critical piece of information. Assumptions, alternatives, and logic must be open to critique by other group members. A high-conflict process such as devil's advocacy may bring more accurate information to the group and result in a successful decision. Thus, a group engaged in a conjunctive task can operate with either process and expect a successful outcome.

The analysis of the influence of the task structure and decision process on group atmosphere also offers an interesting paradox for the combined effects of task structure and decision process on group decision making. Our analysis suggests that most members felt better about the group and the decision when the consensus process was used. However, consensus was not always the most effective decision process given the task structure. Thus, group performance was not always maximized when group atmosphere was positive. While most groups seek to maximize both performance and satisfaction within the group, our results suggest that these two factors are related, but independent outcomes. However, our findings are limited to objective measures of the group's overall effectiveness.

A few limitations with the present research should be noted. First, although our subjects were psychologically committed to this simulation, the use of an experimental tool controls many of the external factors (for example, organizational politics, rewards, and individual personality) that would play a role in group decision making in more naturalistic settings. Second, a non-student population might yield different results given that the motivation for participation is relatively homogeneous among students. Variability in terms of interest, needs, goals, and values may produce different results in terms of decision quality. Third, the assignment of the devil's advocate may have reduced whatever effects are generated by this role naturally emerging within the group. Finally, the student subjects were enrolled in a graduate-level organizational behavior class. Some of the group members may have been influenced by prior information discussed in class.

Overall, the results of our research suggest three major conclusions. First, contrary to previous findings, consensus can produce an effective decision outcome when used in conjunction with an additive task structure. The additive/consensus combination seems to produce the optimal

"fit" for enhancing group, as well as individual, performance. Second, a positive group atmosphere is enhanced through the use of consensus processes. Third, decision quality and group communication effectiveness appear to be contingent upon both decision process and task structure.

One question for future research is how decision makers may successfully manipulate the task structure and the decision process such that group atmosphere, performance, and effective communication reach optimal levels. Task structures as they exist for groups may not be as easy to structure as our laboratory decision task. Awareness of the relationship between task structure and decision process may give managers an advantage when deciding how information and responsibilities should be allocated. The fit between the process and task structure may lead to more effective group decisions for organizations.

## NOTES

Audrey J. Murrell is currently an Assistant Professor in the Katz Graduate School of Business and an Assistant Professor of Psychology at the University of Pittsburgh. Her research interests include strategies to reduce intergroup bias and conflict with a special interest in factors that influence the formation and maintenance of group identification.

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