GROUP TASKS, GROUP INTERACTION PROCESS, AND GROUP PERFORMANCE EFFECTIVENESS: A REVIEW AND PROPOSED INTEGRATION

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When decision-makers in public and private institutions in this society are faced with genuinely important tasks, it is likely that they

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The challenge is to identify, measure, and change those aspects of group interaction process that contribute to such obvious differences in group effectiveness. Toward this end, the chapter is organized into three parts. In Section I we review existing research and thought on the role of group interaction in task-oriented groups, and we suggest that part of the difficulty in understanding the relationship between group interaction and group effectiveness has to do with the nature of existing methodological and conceptual tools. Then, in Section II, we propose an alternative framework for research on group effectiveness. The major functions group interaction serves in enhancing and depressing group effectiveness are explored, and a set of strategies for influencing group interaction and group performance by alteration of “input” factors is proposed within the new framework. The section closes with an argument for a return to action-oriented research as a way to improve simultaneously our understanding of the determinants of group effectiveness and our capability to change and improve it. Finally, in Section III, implications for research and for action are drawn and explored.

I. The Role of Interaction Process in Task-Oriented Groups: Current Thought and Evidence

Although research on group effectiveness rarely includes explicit quantitative assessment of how group interaction affects group performance, it is common for researchers to speculate about the functions of group process when they are developing research hypotheses and when they are interpreting empirical findings. A sampling of such speculations is offered below, both to provide a context for the ensuing discussions, and to reveal the diversity of suggestions that have been made about the functions of group process in task-oriented groups.

Many social psychologists have taken a rather pessimistic view of the role of group process—i.e., seeing it as something that for the most part impairs group task effectiveness. Steiner (1972), for example, treats group interaction process almost entirely in terms of “process losses” which prevent the group from approaching its optimal or potential productivity. It turns out that in fact the findings of many studies can be predicted by the models Steiner proposes.

Other social psychologists suggest that the interaction among group members helps to catch and remedy errors that might slip by if individuals were doing the task by themselves. Thus, the argument goes, although groups may be slow and inefficient because of process problems, their use is more than justified when solution quality (i.e., freedom from errors) is of paramount importance (cf. Taylor & Faust, 1952). Recent work by Janis (1972), however, calls into question the efficacy of group interaction for finding and correcting errors, at least under some circumstances. Janis suggests that “groupthink” may develop as
members become excessively close-knit and generate a clubby feeling of "we-ness." Groupthink is evidenced by a marked decrease in the exchange of discrepant or unsettling information, and by a simultaneous unwillingness to deal seriously with such information even when it is forced to the attention of members. Under these circumstances, Janis suggests, the group may develop and implement a course of action that is grossly inappropriate and ineffective. Janis finds that the principles of groupthink help to explain a number of highly significant and unfortunate decisions made by top-level government officials, such as the Bay of Pigs invasion, and Britain's "appeasement" policy toward Hitler prior to World War II. Apparently even for some very important decisions, patterns of group interaction can develop that allow large and significant errors of fact and judgment to "slip through" and seriously impair group effectiveness.

A more optimistic view of the role of group process is offered by Collins and Guetzkow (1964), who propose that in some circumstances interaction can result in "assembly effect bonuses." That is, patterns of interaction may develop in which the individual inputs of group members combine to yield an outcome better than that of any single person—or even than the sum of individual products. The literature reviewed by Collins and Guetzkow, however, offers little help in understanding how to create such bonuses. The "brainstorming" fad of the late 1950's (Osborn, 1957) seemed to offer one clear instance in which the assembly effect bonus led to group outcomes of higher creativity than those obtained by pooling the products of individuals; yet subsequent research failed to reveal any creative bonuses attributable to the group interaction process per se (Dunnette, Campbell, & Jaastad, 1963; Taylor, Berry, & Block, 1958).

Organizational psychologists involved with experiential "training groups" or with "team-building" activities also tend to be optimistic about the possibility of enhancing group task effectiveness by alteration of group process. In general, they assume that members of many task groups are inhibited from exchanging ideas and information and from working together in a concerted fashion to complete the task. Interpersonal training activities are intended at the least to remove some of the emotional and interpersonal obstacles to effective group functioning and thereby to permit group members to devote a greater proportion of their energies toward actual task work. Moreover, when the dysfunctional "process problems" of a group have been dealt with, members may discover new ways of working together which eventually will help them to achieve previously unknown levels of effectiveness (cf. Argyris, 1969, Kaplan, 1973). In effect, the group can capitalize on its interpersonal processes in the interest of increased task effectiveness rather than find itself distracted from task work by interpersonal problems.

Research data are not yet available to document the belief that interpersonal training activities lead to positive effects on group task performance. There are substantial data which show that training activities can powerfully affect both the nature of the interaction process in groups and the quality of members' personal experiences. But the few studies that have tested the effects of such changes on actual task performance generally have yielded ambiguous or negative results (for reviews, see Herold, 1974; Kaplan, 1973).

In sum, there is substantial agreement among researchers and observers of small task groups that something important happens in group interaction which can affect performance outcomes. There is little agreement about just what that "something" is—whether it is more likely to enhance or depress group effectiveness, and how it can be monitored, analyzed, and altered. A major purpose of this chapter is to make some headway in developing answers to these questions. As a first step, we propose in the next section an organizing framework which is useful in sorting out the specific relationships among (a) the initial state of a task-oriented group, (b) the group interaction process, and (c) the group's ultimate performance effectiveness.

A. An Organizing Framework

A general paradigm (adapted from McGrath, 1964) for analyzing the role of group interaction process as a mediator of input-performance relationships is depicted in Fig. 1. As used here, "interaction process" refers to all observable interpersonal behavior that occurs between two arbitrary points in time (t₁ and t₂). The state of all system variables potentially may be assessed at any given "slice in time, and therefore input-output relationships may be examined for periods of time ranging from a few seconds to a year or more. The longer the time between t₁ and t₂, the greater is the amount of interaction intervening between input time and output time, and the more complex the analysis of the role of interaction in mediating input-output relationships becomes. It should be noted that the process depicted in Fig. 1 can and does "recycle" on a continuous basis. That is, many properties of the group and its members (e.g., group communication structures, individual attitudes) both affect the nature of the interaction process and are themselves changed by that process. Such "outcomes" of group interaction then can affect the nature of subsequent interaction, leading to their further modification, and so on. Fortunately, for analysis of task performance
outcomes (the focus of the present discussion) this phenomenon is not problematic; most group tasks have a natural and easily identifiable end point, at which time measures can be taken with reasonable assurance that "recycling" has not yet occurred.

The fundamental assumption underlying the paradigm in Fig. 1 is that input factors affect performance outcomes through the interaction process. Thus, if highly cohesive groups (input at $t_i$) perform better on some task (outcome at $t_2$) than less-cohesive groups, it should be possible to explain the performance difference by examining the difference between the interaction processes of the high and the low cohesive groups. That is, the "reason" for obtained input-performance relationships always is available—albeit sometimes well-hidden—in the interaction process itself; by appropriate analysis of interaction process it should be possible to develop a rather complete understanding of input-output relationships in any performance setting.

B. Research Evidence

In the paragraphs to follow, research on the determinants and consequences of group interaction process is examined in the context of the framework depicted in Fig. 1. Only findings of relevance to group interaction process as a mediator of input-performance relationships in task-oriented groups are included. Findings from three general types of studies are included: (1) those that deal with input-process relationships; (2) those that focus on process-performance relationships; and (3) those that address the full input-process-performance sequence.

1. Input-Process Relationships

It has been well-established that the nature and direction of group interaction process are affected by numerous "input" factors; therefore this research will not be reviewed in detail here. Among the input factors that have been shown to affect group interaction are leader attitudes (Sample & Wilson, 1965), member personality characteristics (Conway, 1967), group size (O'Dell, 1968), group structure (Cohen, Bennis, & Wolkon, 1961), and group history or experience (Hall & Williams, 1966). The nature of the task on which a group is working appears to be a particularly potent influence on group interaction process; almost every study that addressed the question unearthed substantial task-process relationships (Carter et al., 1951; Deutsch, 1951; Hare, 1962; Morris, 1966; Talland, 1955).

2. Process-Performance Relationships

Research that directly relates measured characteristics of group process to performance outcomes is scarce. Relatively systematic attention, however, has been given to one particular aspect of the process-performance relationship—namely, the "weighting" process by which various solution proposals generated by group members are selected and rejected (Kelley & Thibaut, 1954, Steiner, 1972).

Hoffman (1961), for example, proposed that potential solutions to group tasks gain or lose "valence" as supportive or critical comments are made about them in the group discussion. Hoffman and Maier (1964, 1967) developed a behavior category system to tap the process by which the valence of task solutions changes during group interaction. As predicted, specific solutions to the Parasol Assembly Problem (Maier, 1952) tended to be adopted by the group and used in the final product in direct proportion to their valences. Once solutions reached the minimum level of valence necessary for acceptance, they tended to be adopted forthwith, and group members thereafter spent little energy searching for potentially better solutions.
An implication of the valence model is that an obvious or highly salient solution will tend to be adopted more readily than a nonobvious solution. The obvious solution will tend to acquire valence quickly, and perhaps gain adoption before the nonobvious solution is even seriously considered. The Horse Trading Problem (Maier & Solem, 1952) has an obvious (but erroneous) solution, and groups do often solve the problem incorrectly. Presumably if conditions could be arranged so that the initial obvious solution could be kept from achieving substantial valence, and if simultaneously other less obvious solutions could be encouraged, group performance would increase on this task. Maier and Solem attempted to create these conditions in their study by manipulating leader behavior and found that groups with permissive, accepting leaders did tend to avoid the trap of the obvious (but incorrect) solution more often than did groups in a control condition. Although no explicit measurements of group process were made in this particular study, the data do suggest that an input condition (leadership role definition) can affect productivity (selecting the less-obvious but correct solution) through changes in group process (damping tendencies for group members to build up valence for the initially obvious solution). Another study that provides inferential support for the valence model of process-output relationships is reported by Riecken (1958).

One of the few studies that quantifies the relationships between measures of group process and measures of performance effectiveness is reported by Lanzetta and Roby (1960). The task in this study required the group to achieve a particular configuration of lights on an electrical apparatus by appropriate sequencing of group member responses. All communications among members were monitored and recorded. It was found that measures of interaction predicted task success (time to completion and freedom from errors) better than did measures of members’ task-relevant knowledge or various task training procedures. The authors note that “the way the group ‘utilizes’ its resources and the procedures it employs for communicating essential information are as important, if not more important, than ‘knowledge’ of the problem for determining its performance” (p. 146).

In summary, these studies suggest that the impact of group interaction on group performance can be analyzed systematically and that the results of such analyses can increase understanding of the reasons why some groups are more effective than others. None of the studies reviewed thus far, however, has addressed explicitly the question of how group interaction mediates input-performance relationships. It is to this issue that we now turn.

3. Input-Process-Performance Relationships

The present authors recently attempted to assess explicitly the full input-process-performance sequence. One hundred and eight experimental groups spent 15 minutes on each of four “intellective” tasks. Four hundred and thirty-two separate transcripts of group interaction and 432 group products were obtained. A total of 144 different group tasks were used in the research, 48 each of three task “types”: (a) “production” tasks, which require the production and presentation of ideas or images; (b) “discussion” tasks, which require an evaluation of issues; and (c) “problem-solving” tasks, which require specification of a course of action to be followed to resolve some problem. Specific tasks and order of task presentation were appropriately counterbalanced across groups and experimental condition.

Morris (1966) used these data to examine effects of task type and task difficulty on group interaction. Interaction process was measured by a sixteen-category coding system which focuses exclusively on task-oriented interaction among group members. It was found that task type significantly affected interaction in nine of the sixteen behavior categories (which accounted for about 70% of the groups’ total interaction). In addition, task difficulty significantly affected five interaction categories (which accounted for approximately 40% of the groups’ interaction).

Using the same set of data, Hackman (1968) demonstrated that task type also significantly affected the characteristics of written group products, as measured by six descriptive dimensions (action orientation, length, originality, quality of presentation, optimism, and issue involvement) and two evaluative dimensions (performance adequacy and judged product creativity). The six descriptive dimensions are described in detail by Hackman, Jones, and McGrath (1967).

Thus, Morris established the input-process relationships and Hackman the input-output relationships on the same set of data. The analyses reported below address the extent to which it can be shown, using the same data base, that group performance varies as a function of group interaction process, thereby completing the input-process-performance chain.

Process-performance relationships were examined for all 432 transcripts together, then separately for each of the three task types (144 transcripts for each). Analysis was by canonical correlation, which ad-
dresses the relationship between group interaction and group performance by considering simultaneously all sixteen interaction categories and all eight product dimensions. In addition to a measure of the overall strength of the relationship between the several process categories and product dimensions, the canonical analysis provides a set of weights for both the predictors (the measures of interaction) and the criteria (the product dimensions). These weights indicate the degree to which each of the variables contributes to the overall process-performance relationship. Thus, the analysis reveals not only "how much" relationship exists between group interaction and group performance measures for the tasks used, but also what specific aspects of the interaction and what specific performance measures contribute most substantially to the obtained relationship.

The canonical correlations are presented in Table I both for the combined sample and separately for each of the three task types. The correlations range from .59 to .68 and are statistically highly reliable. It appears, as had been expected, that substantial variation in group performance on intellective tasks is controlled by the nature of the group interaction process.

Table II shows the canonical weights obtained in each analysis. Unfortunately, these weights provide few clues about the substantive meaning of the process-performance relationships obtained. As anticipated, the weights associated with specific interaction categories and product dimensions do differ for the three task types, but these differences appear not to be interpretable in substantive terms.

In an attempt to clarify the meaning of these results, multiple correlations were computed predicting each product dimension separately from the sixteen measures of interaction process, and zero-order correlations were obtained between all process measures and all performance measures. Numerous statistically reliable relationships were obtained—but again, the relationships were so scattered and seemingly inconsistent that it was impossible to draw from them any parsimonious explanations of how group interaction affects group performance on intellective tasks. Thus, while the research did provide evidence that group processes

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**TABLE I**

**Canonical Correlations Between Interaction Process and Product Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>All groups</th>
<th>Groups having production tasks</th>
<th>Groups having discussion tasks</th>
<th>Groups having problem-solving tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canonical correlation</strong></td>
<td>.68</td>
<td>.64</td>
<td>.59</td>
<td>.66</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>.271</td>
<td>.179</td>
<td>.242</td>
<td>.192</td>
</tr>
<tr>
<td><strong>x²</strong></td>
<td>547.8*</td>
<td>266.2*</td>
<td>180.8*</td>
<td>217*</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>432</td>
<td>144</td>
<td>144</td>
<td>144</td>
</tr>
</tbody>
</table>

*Note: Only the first root (A1) for each analysis reached statistical significance and is reported here.

*p < .001; df = 128.
are strongly related to group performance outcomes, it failed to shed much light on the substance of input-process-performance relationships.

Similar conclusions may be drawn from two other studies which examined the full input-process-performance sequence. Sorenson (1971) varied task type (using intellective tasks very similar to those described above), and measured five aspects of the interaction process (structuring, generating, elaborating, evaluating, requesting). Written group products were judged on originality and overall quality. Significant input-performance, input-process, and process-performance relationships were obtained. Consistent with the results reported above, however, the process-performance relationships were complex and did not vary systematically for different input conditions.

Significant relationships among input, process, and performance measures also were obtained by Katzell, Miller, Rotter, and Venet (1970) using a “twenty questions” task. Manipulated input conditions were leader directiveness, task difficulty, and member compatibility; group process was measured by using Bales’ (1950) Interaction Process Analysis. Process-performance relationships in this study were more readily interpretable than those reported previously (i.e., time to solution increased as members sought and exchanged more information), but again these relationships were not moderated by manipulated input conditions.

Some possible reasons why the dynamics of input-process-performance relationships in task-oriented groups have remained enigmatic are proposed in the next section. Then a new approach to research on group process and group effectiveness will be proposed which may lead to more productive attacks on the problem in the future.

C. PROBLEMS IN ANALYZING THE MEDIATING FUNCTIONS OF GROUP PROCESS

There are at least five reasons why research based on existing methodological and conceptual paradigms has not yet succeeded in determining how group interaction process mediates between input and output states. The first two reasons have to do with the appropriateness of existing methodologies for measuring group process in task-oriented groups; the last three address broader issues of research strategy.

1. Behavior Categories

Most interaction coding systems focus almost exclusively on specific acts of communication which take place among group members. The Bales (1950) system, for example, categorizes such task and socioemotional behaviors as “shows tension” and “asks for orientation”; the Morris (1966) system categorizes communications directly relevant to carrying out the task such as “proposes solution,” “repeats,” and “seeks evaluation.” Such systems are appropriate for research programs that aim simply to describe patterns of interaction in task-oriented groups, or that attempt to map the relationships between various input conditions and the resulting group interaction process. They are less likely to be useful in research aimed at understanding how interaction mediates the influence of input conditions on group performance, or how different patterns of interaction lead to improved or impaired group effectiveness. The reason is that there is no clear conceptual or operational link between the kinds of behaviors tapped by these systems and the immediate determinants of group effectiveness. It is doubtful, for example, that the “number of questions asked” in a group will directly or indirectly affect the performance of most groups. It appears, rather, that coding systems are needed that derive directly from conceptual propositions about those aspects of group interaction that are crucial in determining group effectiveness for various kinds of group tasks. The content of such theory-based systems, it is argued, would be substantially different from that of most existing systems and would more clearly reveal just what goes on in groups to sometimes facilitate group effectiveness and sometimes impair it.

2. Analytic Models

Most existing interaction coding systems (and analytic models for using system-derived data) yield summary scores that reflect only the frequency or the rate of interaction in various content categories. In some cases (e.g., for monitoring the level of valence associated with various solution proposals in the Hoffman-Maier research) frequency data appear to be fully appropriate for the specific purpose of the research (in this case predicting solution adoption by the group). But in other cases, and perhaps especially for highly complex tasks, frequencies or rates of interaction may be quite inappropriate summary measures to use in attempting to predict group task effectiveness (cf. Morris, 1970). An example provided by H. L. Raush (personal communication) illuminates the point. An understanding of successful chess play surely would not result from a study of the number of times players moved each of the chess pieces during games. Instead, one would almost certainly attempt to discern the sequences of moves players made in response to the particular status of the board at any given time. In the context of this illustration, our attempt to predict the characteristics of written group products from simple interaction frequencies does not (in retrospect) seem intuitively reasonable.
Analyses of interaction sequences are difficult to carry out, although they can be quantitatively modeled as stochastic processes (Rausch, 1965; Wolf, 1970). To date, however, stochastic modeling of communication processes has been applied primarily to act-by-act exchanges in dyads on a moment-to-moment basis. It appears that if sequential analyses are to be useful in understanding the mediating functions of group interaction process, new analytic techniques will be required. In particular, it will be necessary for interaction sequences to be related directly to the task goals and strategies being pursued by group members, and for procedures to be devised that permit analysis of groups larger than dyads over relatively long periods of time. Although some progress recently has been reported (Swinth & Tuggle, 1971; Wolf, 1974), the development of such methodological and analytic techniques remains a significant research challenge. In the meantime, the researcher interested in assessing how group effectiveness is influenced by interaction process might be well-advised to focus directly on the molar strategies that guide the moment-to-moment interactions among members—rather than attempting to chart the component sequences of communicative acts or simply summing the frequencies of interaction in various content categories.

3. Inconsistencies across Tasks

Although few studies have assessed directly the relationship between group process and performance separately for different types of tasks, the McGrath and Altman (1966) review of the field provides implicit support for the proposition that process-performance relationships are likely to be inconsistent across different task types. In almost all studies reviewed in which input-output relationships were tested separately for groups working on different tasks, the form of these relationships was found to vary from task to task. It is not a large leap of inference to conclude that the way in which group processes mediate input-output relationships varies across tasks as well. The data reported in Table II confirm this expectation: Although canonical correlations between measures of group process and measures of group performance were statistically significant for all three types of tasks used, the contribution of specific interaction categories to the prediction of performance outcomes varied substantially (if mysteriously) across task types.

Such findings suggest that it may be unrealistic to work toward achieving a truly general theory of the relationship between group interaction and group performance effectiveness. Instead, it may be necessary to make some a priori distinctions among general classes of tasks and then to delve into process-performance relationships within each class.

While this is not as elegant an approach as some might desire, the development of subtheories of process-performance relationships would nonetheless represent a notable improvement over current understanding of group process determinants of group effectiveness.

4. Research Settings

The research settings and methodological strategies used in studies of group effectiveness may themselves constrain the possibility of unearthing significant process-performance relationships. Most research that involves analysis of the interaction process of task-oriented groups takes place in laboratory settings and uses methodological strategies consistent with paradigmatic experimental social psychology. For reasons to be suggested below, such strategies invariably involve substantial (although often implicit) control over both the task of the group and the norms that guide group member behavior.

In a typical social psychological study of groups, for example, the group task is carefully specified a priori, and all groups in the study perform the same single task. Tasks are almost never sampled within an experimental design in a way that allows individual differences among tasks to vary as do individual differences among subjects or groups. Thus, for all practical purposes, the task is held constant within the designs of most social psychological studies of small groups.

Group norms are usually, although unintentionally, held relatively constant as well. Most laboratory studies of group effectiveness use ad hoc groups which are convened for such a short time that the group does not have a chance to develop its own history or its own unique normative structure. And, since most members of experimental groups have a good deal of everyday experience in committees and other small task groups, they are likely to bring to the group rather similar notions about "how one should behave" in a task-oriented group. The net effect is that the norms that guide the behavior of members, like the tasks they are given to perform, are unlikely to vary much from group to group within a given study.

But the research literature on small groups suggests that both group tasks and group norms are very powerful influences on interpersonal behavior (cf. reviews by Hackman, 1975; McGrath & Altman, 1966). Thus, when tasks and norms are held constant (or relatively so) in experimental studies of groups, it is nearly inevitable that the richness and diversity of interpersonal behavior within groups will be reduced substantially.

For some research purposes, it may be quite desirable for tasks and norms to be well-constrained in the experimental setting. Precisely
because variation in interpersonal behavior is reduced, groups in the research will be more similar to one another than would be the case if tasks and norms varied widely. This, in turn, will decrease the amount of "error" variance within experimental conditions. As a result, the chances of reliably detecting and describing relationships between input and output variables for these groups will be enhanced. Group processes, which could have substantially muddied the waters that separate input from output states, have been given much less chance to do so.

But if the research purpose is to understand how group processes themselves relate to output states (or how they mediate input-output relationships), exactly the reverse is true: if the research setting and methodological strategy serve to reduce the variation in group interaction process in the groups under study, then the likelihood of obtaining strong empirical correlates of group process measures also will be reduced. In a sentence: The less meaningful variation there is in the interaction among group members, the less one can learn about the role of interaction in affecting group performance. The implication, then, is that studies of process-performance relationships will require research designs that allow interpersonal processes to vary more widely than is the case in traditional small group experiments. And this, we suggest, will require substantially different treatment of group tasks and group norms than has heretofore been the case.

5. Cultural Norms

Cultural norms about appropriate behavior in groups are such that patterns of behavior that might optimize group task effectiveness are unlikely to appear in natural groups. Typically, the norms that guide individual behavior in groups tend to be rather "conservative"—that is, they minimize the chances that members will have to deal with uncomfortable or anxiety-arousing behaviors within the group. Member feelings are expressed circumspectly, if at all; interpersonal risks are taken rarely, and then only when avenues of face-saving retreat are readily available; deviant ideas and behaviors tend to be dealt with swiftly, if gently; and so on (Argyris, 1969). When groups are studied as they develop "naturally," whether in laboratory or field settings, then there is an excellent chance that the behavior of group members will be guided by such norms.

One implication is that research findings from such groups will apply only to other groups in which these norms also are operative. This would seem, however, to be a constraint on generality that is of little consequence because the norms are in fact so widely shared by members of task-oriented groups in this culture.

A second implication seems more serious: What if these norms were in many ways dysfunctional for group effectiveness on most tasks? If this were true, then researchers would inevitably discover that group processes serve mainly to impair group effectiveness, and in all probability research attention would be turned toward understanding more fully the nature and extent of the apparently widespread group "process losses." Given this possibility, the rather pessimistic conclusions some social psychologists have drawn about the role of group processes in affecting performance outcomes can be viewed in new perspective.

Almost no studies have addressed the more optimistic side of the same coin—i.e., whether groups might perform more effectively if members worked together in ways that are quite different from generally accepted norms about appropriate behavior in groups (Argyris, 1969). It is conceivable that increased leverage could be brought to bear on the "group effectiveness problem" by deliberate experimental alteration of the norms that govern interaction in groups, such that new and potentially more functional patterns of behavior emerge for empirical examination. Otherwise, research will necessarily continue to describe and document "the way things are" in groups at present—including the sometimes-unfortunate consequences of traditional norms about behavior in task-oriented groups.

6. Summary

We have suggested that various methodological tools and research strategies typically used in studies of group effectiveness may severely limit the kinds of understandings that can emerge from that research. Indeed, the rather pessimistic conclusions of much psychological research on the role of group interaction process (e.g., process may operate primarily to keep a group from achieving its potential productivity) may themselves have been predetermined in part by the methodologies used. We turn now to some alternatives for research on small group effectiveness which follow from the above discussion.

II. Toward Some Alternatives for Research and Action

In the pages to follow, we suggest a new, three-pronged approach to research on group effectiveness. The first prong involves a more differentiated view of the functions of group interaction than has typified previous research. The second concerns ways that "input" factors might be altered to improve group effectiveness, in view of the newly proposed functions of group interaction. The third concerns a new kind of research
strategy which may be required to learn whether and how such improvement in group performance can be achieved.

A. THE FUNCTIONS OF INTERACTION PROCESS IN INFLUENCING GROUP EFFECTIVENESS

The input-process-output model of group effectiveness discussed earlier suggests that interaction process somehow mediates input-performance relationships. Yet the question of exactly how such mediation takes place remains open and troublesome. In fact, material presented in the previous section suggests that there may be no single or general answer to the question; instead, group process may serve quite different functions, depending on the kind of task facing the group.

In attempting to develop ideas about the ways group interaction can determine group performance, we offer the following general propositions about “what makes a difference” in group performance effectiveness.

1. As Katzell et al. (1970) note, the number of factors that can affect group output is so great that managing more than a few factors at a time, either conceptually or experimentally, is nearly impossible. As a strategy for dealing with this manifold, they suggest using “a single set of mediating variables in order to link conceptually and functionally all kinds of group inputs . . . with various kinds of group outputs” (p. 158). Consistent with this strategy, we propose that a major portion of the variation in measured group performance is proximally controlled by three general “summary variables”: (a) the effort brought to bear on the task by group members; (b) the task performance strategies used by group members in carrying out the task; and (c) the knowledge and skills of group members which are effectively brought to bear on the task. It is proposed that, if one could somehow control or influence these three summary variables, one would be able to affect substantially the level of effectiveness of a group working on almost any task.

2. Each of the summary variables can be substantially affected (both positively and negatively) by what happens in the group interaction process. The interaction among group members can, for example, either increase or decrease the level of effort members exert in doing the task, and can affect how well the efforts of individual group members are coordinated. Similarly, group interaction can lead to either effective or ineffective task performance strategies, and to efficient or wasteful use of the knowledge and skills of group members. The specific roles that group interaction plays in a given situation will depend substantially on the task being performed.

3. Different summary variables (or combinations of them) are operative for different types of group tasks. For some tasks, for example, how hard group members work (member effort) will almost entirely determine their measured effectiveness; Ringlemann's group tug-of-war (Ingham, Levinger, Graves, & Peckham, 1974) is an example of such a task. For other tasks, effort will be mostly irrelevant to performance effectiveness, and other summary variables will be operative. For example, on a vocabulary test which is taken collaboratively by group members with no time limit, performance is unlikely to be affected by how hard members “try,” but it will be dependent on their collective knowledge of the meanings of words (member knowledge and skill). For some group tasks, of course, measured performance effectiveness may depend on two or on all three of the summary variables. The point is simply that which of the summary variables will “make a difference” in measured group effectiveness is heavily determined by the type of group task on which the group is working.

The remainder of this section extends and elaborates on the above propositions, with particular emphasis on the ways in which group interaction can impair or enhance performance effectiveness via the three summary variables. We shall acknowledge the likelihood of “process losses” in certain kinds of performance situations—but also shall attempt to point toward ways in which interaction process can increase the likelihood of process “gains.” Then in the next major section, we address concrete strategies which may be useful in actually improving group performance effectiveness.

1. Member Effort

The first summary variable to be considered is also the most ubiquitous: How hard group members work on a task should be an important determinant of group effectiveness on many different types of group tasks. And, while many personal and situational factors can influence the level of effort the group brings to bear on its task activities, it is proposed that group interaction affects effort primarily in two ways: (a) by affecting the coordination of the efforts of individual group members, and (b) by affecting the level of effort group members choose to expend working on the group task (their task motivation).

a. Coordination of member efforts. If effectiveness on a given group task is influenced by the amount of effort group members apply to it, then it is important that members coordinate their activities so that efforts of individual members are minimally “wasted.” On the Ringlemann tug-of-war, for example, a group will do quite poorly unless the group devises some means of ensuring that members pull at the same
examination of interaction should at least reveal the nature of the coordination scheme being used by the group, and (especially for tasks unfamiliar to group members) it may show exactly how the group came up with whatever coordination devices it is using.

Steiner (1972) shows that, when the efforts of individual group members must be coordinated to accomplish the task, there will always be some slippage which can only serve to keep a group from achieving its potential productivity (i.e., that which would be obtained if the efforts of each group member were fully usable by the group in the service of task effectiveness). Moreover, the larger the group, the greater will be the process loss (which Steiner calls "coordination decrement"), simply because the job of getting all members functioning together in a coordinated fashion becomes increasingly difficult as the number of members gets larger. Therefore, attempts to increase productivity by helping group members coordinate their activities more effectively can be construed as working toward minimizing inevitable process losses, rather than as creating "process gains."

b. Enhancing or depressing the level of member effort. While individual members usually approach a given group task with some notion about how hard they expect to work on it, what happens in the group can radically alter that expectation in either direction. Presumably an individual will increase his level of effort to the extent that working with the other group members leads to the satisfaction of his personal needs or the achievement of his personal goals. If his task-oriented efforts are reinforced, he should work harder on the task; but if his efforts are ignored or punished, his effort should decrease. The point here is that social interaction can importantly affect how much effort an individual chooses to expend in work on the group task, and that the level of effort can easily change over time as the characteristics of the group interaction change.

The depression of member effort has been explored by Steiner (1972) in terms of a "motivation decrement." He suggests, for example, that member effort declines as group size increases. If our paradigm is valid, then the explanation for the relationship between group size and member effort will be found in the patterns of interaction that characterize small vs. large groups. Conceptual and empirical attention recently has been directed toward such group process aspects of motivation decrements (see Steiner, 1972, Chapter 4). As yet, however, systematic attention has not been given to ways in which patterns of interaction might be created in groups which would result in a "motivation increment," encouraging members to work especially hard on the group task. The feasibility of creating such increments in task-oriented groups is explored later in this chapter.

2. Task Performance Strategies

As used here, "strategy" refers to the collective choices made by group members about how they will go about performing the task. Included are choices group members make about desirable performance outcomes and choices about how the group will go about trying to obtain those outcomes. For example, group members might elect to try to make their product funny or elegant or practical; or they might decide to free-associate for a period of time to get ideas about the task before evaluating any of the possibilities that they generated. These all are examples of performance strategies under the voluntary control of group members, and they are related. How we proceed to carry out the task depends in part on what we are trying to achieve, and vice versa.

A number of researchers have demonstrated that the performance effectiveness of a group can be affected markedly by the strategies members use in working on the task (e.g., Davis, 1973; Maier, 1963; Shiflett, 1972; Shure, Rogers, Larsen, & Tussone, 1962; Stone, 1971). What specific strategies will be effective or ineffective in a given performance situation, however, depends on the contingencies built into the task itself. As was the case for effort, there are some tasks for which differences in performance strategies will have relatively little impact on the ultimate effectiveness of the group. The group vocabulary test described earlier, for example, would seem minimally responsive to differences in task performance strategies; almost any strategy that ensures that the group member who knows the answer will communicate it to his peers will suffice. Strategy would be considerably more important for a task requiring the solution of complicated algebra problems. In this latter case, the approach a group takes to the task (e.g., breaking the problem into parts vs. trying to solve the problem in one step) could have a considerable impact on the probability of successful performance. Because of such differences in "what works" for different tasks (or at different stages of work on a single complex task), it has been suggested that perhaps the only universally effective strategy may be an ability and willingness to switch from one specific strategy to another as the need arises (Shiflett, 1972, pp. 454-455).

There are two ways in which group interaction process can affect the performance strategies that a group brings to bear on its task: (a) through implementing preexisting strategies that are shared among group
members; and (b) through reformulating existing performance strategies or generating new ones. These two functions of group interaction are examined below.

a. Implementing existing, shared strategies. As people gain experience with particular kinds of tasks in the course of their everyday lives, particular strategies for working on these tasks become well-learned. When an individual is given a new task from some familiar, general class of tasks, he need not spend time actually deciding how to work on the task or selecting appropriate outcomes. Instead, he can simply begin to do the new task. The same process occurs when a group of individuals works on a task that is familiar to them. Everyone in the group may know very well the "obviously right" way to go about working on the task, and no discussion of strategy need take place in the group at all.

In such cases, group interaction serves mainly to implement existing strategies already well-learned by group members, and no evidence of the group's "working on its performance strategy" may be visible in the overt interaction among members. This phenomenon is demonstrated clearly in the data collected by the present authors. It will be recalled that the characteristics of the written products prepared by groups in the study were quite strongly affected by the type of task being worked on. Production tasks led to highly original products; discussion tasks prompted tasks high in issue involvement; and problem-solving tasks led to products high in action orientation (Hackman, 1988). In a follow-up study, individuals working by themselves indicated, when asked, that they were confident that a response to a production task "ought" to be original, a response to a discussion "ought" to be heavily issue-involved, and so on.

Yet analysis of interaction transcripts from the original study revealed that these apparently well-learned strategies were rarely discussed in the experimental groups. One hundred of the 432 transcripts (each of a single group working on one task) were randomly selected and analyzed for strategy comments by two judges. A total of only 143 comments about strategy were found—less than 1.5 comments per group. Only 25 of the comments prompted further discussion among group members, and on 36 of the transcripts there was no strategy-relevant interaction at all during the 15-minute work period.

These data support the notion that, at least in some circumstances, group members are both capable and desirous of implementing implicitly-agreed-upon performance strategies without explicit discussion of what they are doing. In these circumstances, the interaction process serves primarily as a vehicle for implementing the pre-existing performance strategies. As in the case of coordination of member efforts, group members may encounter interpersonal difficulties which impair the efficiency with which such implementation is actually carried out—in other words, a process loss occurs which results in suboptimal group effectiveness.

b. Developing or reformulating strategic plans. While most tasks do not constrain a group from overtly discussing and reformulating its performance strategies (or from developing new strategies from scratch), there appears to be a pervasive norm in groups not to address such matters explicitly (Weick, 1969, pp. 11-12). The low incidence of strategic discussion noted above in the Morris-Hackman data is one possible example of this norm in operation. Another is reported by Shure et al. (1982). In that study, it was found that "planning" activities tended to be generally lower in priority than actual task performance activities—even when group members were aware that it was to their advantage to engage in planning before starting actual work on the task, and when it was possible for them to do so without difficulty. A closely related phenomenon is the tendency for group members to begin immediately to generate and evaluate solutions when they are presented with a task, rather than to take time to study and analyze the task itself (Maier, 1963; Varela, 1971, Chapter 6).

To the extent that norms against strategy planning exist, the chances are lessened that the preexisting strategies members bring to the group will be altered and improved upon, or that new (and possibly more task-effective) strategies will be generated by group members. This obviously can limit the effectiveness of the group on many types of tasks.

To explore whether group task effectiveness can be improved by explicit attention to matters of performance strategy, an additional analysis was made of the interaction transcripts collected by the present authors. The relationship between the frequency of strategy comments and the judged creativity of group products was analyzed for the 100 transcripts described above. Only comments made during the first third of the performance period were included in the analysis, since those made later would be unlikely to have much effect on the final product. Even though relatively little interaction about strategy took place in these groups, the relationship between the number of strategy comments and group creativity was significantly positive (\( p < .05 \)), as shown in Fig. 2.

The data in Fig. 2 are correlational, and they do not permit a conclusion that strategy discussion "caused" increased group creativity. Nevertheless, to search for possible reasons for the positive relationship obtained, all transcripts in which relatively full-fledged exchanges about
strategy took place were reviewed. The transcripts suggest that one function of strategy discussion is to "unfreeze" individuals from traditional, well-learned approaches to the task, and thereby open the possibility of discovering a more task-effective way of proceeding. Strategy discussion often began, for example, after one group member made a suggestion that was deviant from shared ideas about "appropriate" strategy for the task at hand (e.g., suggesting a bizarre solution to a routine problem-solving task). In some cases, in the process of explaining to the deviant why his idea was faulty, members began to explore new ways of proceeding, some of which subsequently were adopted.3

In sum, it appears that the functions of interaction guiding the implementation and reformulation of performance strategies may be of considerable importance in understanding and predicting group performance effectiveness. Moreover, the data suggest that overriding existing norms which often discourage explicit strategy planning may be a useful way to help groups improve their performance effectiveness in some circumstances.

3. Member Knowledge and Skill

The knowledge and the skills of group members—and the way these are brought to bear on the group task—are the third general summary variable which may be impacted by group interaction process. Once again, there are some tasks that require only a minimal level of knowledge or skill for effective performance, and there are others for which performance measures will be substantially affected by the level of knowledge and skill group members bring to bear on the task. A task requiring the group to assemble a number of very simple mechanical devices with no time limit should not be very responsive to differences in the knowledge and skill members apply to the task; the group vocabulary test described earlier, on the other hand, should be highly responsive to the way group members assess and apply their knowledge.

It is proposed that group interaction serves two major functions in influencing the effectiveness with which the knowledge and skill of group members are applied to the task: (a) assessing and weighting the possible contributions of different group members—who presumably vary in the level of task-relevant talent they have brought to the group; and (b) creating conditions within the group which will lead to a change (presumably an increase) in the overall level of knowledge and/or skill group members have and are able to apply to the task.

a. Assessing and weighting member knowledge and skill. For tasks on which knowledge or skill are important in determining performance, it often is possible to predict how well the group will do solely on the basis of the talents of its members (Davis, 1969; Haythorn, 1968; Kelley & Thibaut, 1969; Steiner, 1972). The specific predictive model required, of course, depends on the task: for some tasks, the group should operate at the level of its most competent member (e.g., as in Steiner's "disjunctive" model); for others, the group would be expected to perform at the level of the "average" member; for still others, group performance should be determined by the least competent member (e.g., Steiner's "conjunctive" model).

In general, empirical tests of such predictive models have been reasonably successful. Of special interest for present purposes, however, is the recurrent finding that, when actual group productivity is at variance with predictions, it is usually because the model has over-predicted group performance. That is, given the level of member talent in the group, the group "should" have performed better than it actually did. The implication is that the interaction process of the group, through which the talents of members are assessed, weighted, and brought to bear on the task, must have been in some way inadequate.

For some tasks, such process losses should not be substantial. For example, when the specific knowledge or skill required is obvious, and when obtaining the solution does not involve complex teamwork among members, sophisticated or subtle social processes are not required to
identify the necessary talents and to apply them to the task. Instead, group interaction may serve merely as a vehicle for exchanging data, and for informing other members that one "knows the answer." There is little opportunity here for process fum-ups.

Such apparently was the case in a study reported by Laughlin, Branch, and Johnson (1969) which used the Terman Concept Mastery Test as the group task. A large number of students were given the Terman test, and were trichotomized on the basis of their test scores. Triads were formed with different combinations of member talent (i.e., high-high-high, high-high-medium, high-high-low, etc.). All ten possible combinations of talent were used. The Terman test was then readministered, but this time it was taken collaboratively by triad members. The relative level of performance of triads could be predicted quite accurately from the overlap of member talent within each type of triad. All predictions were made solely from the preinteraction test scores of triad members; group interaction processes within triads did not enter into the data or theorizing at all, and apparently would have contributed little to predictions of group effectiveness on this particular task. Similar findings predicting group performance from member knowledge or skills with minimal attention to matters of interpersonal process have been reported by Egerman (1966), Goldman (1965), Johnson and Tocivia (1967), Laughlin and Branch (1972), and Laughlin and Johnson (1968).

On other tasks, however, the mediating role of group process may be more substantial and the risk of process losses substantially greater. Consider, for example, tasks on which the knowledge or skills required for successful performance are complex and subtle, and on which considerable teamwork is required to coordinate and apply member talents. In such circumstances, our ability to predict group effectiveness simply from measures of individual talent without knowledge of group process should be diminished.

A novel case in point is the prediction of the performance of professional athletic teams from data about the skills of individual team members (Jones, 1974). As would be expected, Jones found substantial relationships between measures of individual skill and team performance; teams with better athletes did better. However, the level of prediction attained was higher for some sports than for others. For example, nearly 90% of the variation in baseball team effectiveness was predictable from measures of team member skill, as compared to only about 35% for basketball teams. As the author notes, success in basketball is especially dependent upon personal relations and teamwork among players. Thus, process losses might be more likely to impair basketball team effectiveness than would be the case for other team sports.

We have suggested above that, when the primary functions of group interaction are to assess, weight, and apply member talent, process losses are inevitable. For some tasks (i.e., those involving complex skills and high levels of teamwork) the potential losses are greater than for others. In every case, however, group process considerations will determine to some degree how near a group comes to its potential performance, given the capabilities of its members.

b. Affecting the level of talent available to the group. Group interaction process can, at least potentially, serve as a means for actually increasing the total amount of member talent available to the group for work on the task. The issue here is not the simple exchange or coordination of existing knowledge and skill, as discussed above; that function of group interaction (while relatively easy to observe and document) does not result in a net increase in the total supply of talent available to the group. Instead, the present focus is on how group members can do more than merely share among themselves what they already know— and instead work as a group to gain knowledge or generate skills that previously did not exist within the group.

Virtually no controlled research has been carried out on this latter function of group interaction. The "training group" approach to the development of interpersonal skills (Argyris, 1965; Bradford, Gibb, & Jones, 1964; Schein & Dennis, 1965) postulates that group members can effectively use one another as resources to increase member interpersonal competence and thereby increase the level of competence in the group as a whole. But the social processes through which such learning takes place are only beginning to be illuminated (cf. Argyris & Schon, 1974), and additional research on the talent-enhancing functions of group interaction is much needed.

4. Summary

In this section, we have examined the impact of group interaction process on each of three summary variables: (a) the level of effort brought to bear on the task; (b) the task performance strategies implemented by group members in carrying out the task; and (c) the level of knowledge and skill at the disposal of the group for task work. The impact of group interaction on each of the three summary variables is summarized in Table III.

The table emphasizes that the functions interaction process serves are quite different for each of the three summary variables. The implication is that a researcher who is attempting to understand the process determinants of group performance will have to examine different aspects of the group process, depending on which of the summary variables...
new, task-effective ways of interacting which will make it possible for anticipated from knowledge about the talents and intentions of group members to achieve a level of effectiveness which could not have been gained. At least the possibility exists for group members to find and implement approaches an interventionist would take in attempting to help group members create more task-appropriate patterns of interaction would vary, depending on the summary variables operative for the task being performed.

As noted in column A of Table III, there are inevitable process losses associated with each of the three summary variables. A group can never handle the process issues in column A perfectly; the group's performance therefore will depend in part on how successful members are in finding ways to minimize these process losses. At the same time (column B) there are potentially important (but often unrecognized) process gains associated with each of the summary variables. That is, at least the possibility exists for group members to find and implement new, task-effective ways of interacting which will make it possible for them to achieve a level of effectiveness which could not have been anticipated from knowledge about the talents and intentions of group members prior to the start of work on the task. In the section to follow, we explore possibilities for achieving such performance-enhancing process gains.

B. Recasting the Role of “Input” Factors as Determiners of Group Effectiveness

The second thrust of our proposed three-pronged approach to research on group effectiveness is explicitly change-oriented. We shall attempt to show how group effectiveness can be improved above the level expected from column A of Table III by alteration of various “input” factors (cf. Fig. 1). The specific input factors considered are (a) the structure of the norms which guide group member behavior; (b) the design of the group task; and (c) the composition of the group—i.e., the characteristics and histories of group members. All these factors affect the interaction process of the group, and all can be adjusted or “set” prior to the start of actual task performance activities.

We propose that each of the three summary variables discussed in the previous section is especially responsive to changes in one of the input factors identified above. In particular, we explore below the possibility that (a) performance strategies can be made more task-appropriate by modification of group norms; (b) member effort can be increased by redesign of the group task; and (c) the level and utilization of member knowledge and skill can be improved by altering the composition of the group.

1. Task Performance Strategies

The task performance strategies used by members of a group, while always potentially open to member-initiated change, are often well-codified as behavioral norms of the group. Group members typically share a set of expectations about proper approaches to the task, and to some degree the group enforces member adherence to those expectations. Such norms often short-cut the need explicitly to manage and coordinate group member behavior. Everyone knows how things should be done, and everyone does them that way. If a person deviates from the norm about strategy, perhaps by suggesting an alternative way of proceeding or by behaving in a way inconsistent with the norm, he often is brought quickly back into line so that he does not further “disrupt the group” or “waste time” (Hackman, 1975).

Ideally, the presence of such norms should contribute to the task effectiveness of the group—simply because little time would have to be spent on moment-by-moment behavior-management activities, leaving more time for actual task work. However, this advantage will accrue
only if the norms that guide the selection and use of performance strategies are fully task-appropriate. If existing norms about strategy are dysfunctional for effectiveness, then performance is likely to suffer unless they are changed—despite their time-saving advantages.

As was discussed earlier, the problem is that reconsideration of strategic norms in task-oriented groups rarely occurs spontaneously, even when there is clear evidence available to members that the group may be falling at the task (e.g., Janis, 1972). Member views about what is and is not an "appropriate" way to approach a given task often are firmly held, widely shared, and very resistant to change. Even attempts by a group leader or outside interventionist to change strategic norms may be resisted, because such changes often involve explicit consideration of group process issues or because they involve alteration of familiar ways of doing things. Neither of these is easy or comfortable for most people to do.

The challenge, then, is to create conditions that encourage group members to reconsider (and possibly change) their norms about performance strategy when existing norms appear to be suboptimal for the task at hand. Three approaches to meeting this challenge are presented and evaluated below.

a. Diagnosis—feedback. Because group members often are unaware of the nature and impact of the norms that govern their choice and use of task performance strategies, it may be necessary to help them gain increased understanding of these norms before they will be able to change them. Of considerable potential use in this regard is the Return Potential Model proposed by Jackson (1966). This model addresses the distribution of potential approval (and disapproval) group members feel for various specific behaviors which might be exhibited in a given situation. It is represented in a two-dimensional space: The ordinate is the amount of approval and disapproval felt; the abscissa is the amount of the given behavior exhibited. A "return potential curve" can be drawn in this space, indicating the pattern and the intensity of approval and disapproval associated with various possible behaviors. Data to plot such a curve can be obtained either directly from reports of group members or indirectly by observing patterns of approval/disapproval which occur in the group.

An example of a return potential curve is shown in Fig. 3. This particular curve might reflect the norms of a group regarding the amount of talking an individual does during a group meeting. Both too little and too much talking, in this case, would be disapproved, but the intensity of the disapproval is somewhat stronger for someone who talks too much than for someone who talks too little. (The units of behavior in the example in Fig. 3 are arbitrary; in practice, the abscissa would be scaled using units appropriate to the behavior in question.) A return potential curve can, theoretically, assume any shape. For behavior such as "raising questions about task performance strategies," the curve might begin near the "indifferent" point on the approval/disapproval axis, and move sharply downward for increasing amounts of that behavior.

Much of the elegance of the Return Potential Model lies in its usefulness as a vehicle for generating quantitative measures of the characteristics of norms (Jackson, 1965, 1966). These measures can be provided to group members to increase their understanding of the existing norms of the group, and to help them decide whether (and how) they wish to change their norms. In addition to its uses in diagnosis and change activities, the Return Potential Model should be useful for research on norms, since the quantitative measures can be used to assess the conditions under which groups actually do alter their norms.
what the effects of these changes are on group process and group effectiveness. At present, unfortunately, the potential of the model either for research or as a basis for normative interventions has not received systematic test.

b. Process consultation. A second general approach to changing group norms about strategy involves the use of an outside consultant to help group members discover and implement new, more task-effective ways of working together. In its most flexible and general form, process consultation involves joint work by the consultant and the group to diagnose the state of the group, and to plan what to do on the basis of that diagnosis (Schein, 1969). Thus, process consultation involves a flexible and often ad hoc set of interventions. And, since there is no set of standard procedures to guide the behavior of the consultant, it demands a great deal of clinical sensitivity and skill on his part.

Few studies have explicitly examined the effectiveness of process consultation as a strategy for helping group members revise their internal processes, although a number of case reports suggest that the approach may be effective. One study (Kaplan, 1973) has addressed explicitly the usefulness of process consultation as a technique for altering group norms about how interpersonal relationships in the group are managed. In the experimental condition, Kaplan helped group members develop norms which encouraged direct and public processing of social and emotional phenomena as they emerged in the group. His findings showed that process consultation did result in alteration of the “target” norms of the group, resulting in numerous changes in interpersonal relations in the group and in member satisfaction with the group experience.

In the Kaplan study (and in most applications of process consultation as a change technique) the consultant spent considerable time with group members, helping them examine existing norms and experiment with new ways of behaving. In this respect, broad-gauge process consultation is not a very efficient technique, at least in the short term. The hope, of course, is that over the long term group members will develop their own diagnostic and action skills which will reduce their dependency on the consultant and, in effect, allow group members to consult with themselves about the most effective task and interpersonal processes to use in various situations.

An alternative consultative approach which would appear more useful in the short term is to educate group members in specific strategic alternatives or techniques for carrying out the task. A number of such techniques have been proposed, such as setting time limits for discussion, temporarily separating the generation of ideas from their evaluation, focusing on analysis of the task before beginning to perform it, setting time aside to locate facts and potential obstacles to implementation of the solution, devising specific structures for exchanging ideas and information among group members, and so on (cf. Kepner & Tregoe, 1965; Maier, 1963; Osborne, 1957; Varela, 1971). Some of the techniques proposed are based on research findings; others derive more from intuitive considerations. All are intended to provide strategies for proceeding which will be immediate aids to group effectiveness.

There are at least two problems with technique-based approaches to changing preexisting group norms about strategy. First, the value of any given technique depends on the task; yet there is very little information available which would help group members to select those strategies likely to be particularly useful for a given task. Second, some of the techniques involve the use of group relations skills which may not be valued or well-practiced by group members. Maier and Thurber (1969), for example, assessed the effectiveness of three different strategies for working on a problem-solving task. None of the strategies was found to be of much help in improving performance effectiveness, but the authors attribute the results more to the unwillingness or inability of group members to follow the instructions provided, than to the effectiveness of the strategies themselves. Thus, regardless of the potential usefulness of a given strategy for working on a task, the strategy cannot help the group unless members are both motivated and sufficiently skilled to use it appropriately. At present little is known about how to introduce such techniques and to train members in their effective utilization.

Probably the most straightforward process consultative technique for helping members consider and possibly revise their norms about performance strategy is simply to provide the group with a “preliminary group task” prior to their beginning work on the primary task. This preliminary task would require members to discuss the task performance strategies they plan to use on the main task—and to consider revising or replacing them if warranted by the discussion. Thus, the intervention capitalizes on the tendency of group members to follow rather slavishly the demands of tasks they see as legitimate (March & Simon, 1958, p. 185; Shure et al., 1960). Since in most normal circumstances the immediate demands of the primary task apparently drive out tendencies toward strategy-planning activities, introduction of a preliminary group task could serve to “hold off” such immediate task demands until strategy planning has been completed.

The “preliminary task” approach was used with some success in a recent study which will be described in more detail later (Hackman, Weiss, & Brousseau, 1974). Group members were given a preliminary
task which explicitly required them to discuss the performance strategy they would use on the main task. The experimenter discussed with the group the importance of formulating a task-appropriate performance strategy, answered any questions members had about the preliminary task, and then left the room. Groups in the experimental condition did in fact follow the requirement of the preliminary task and discussed their strategic options extensively. As predicted, control groups engaged in virtually no spontaneous discussions of strategy; they proceeded directly to work on the primary task in ways that were consistent with their private, a priori notions about how such a task should be done.

While a preliminary group task gets strategy discussions underway with a minimum of personal involvement by the outside consultant, it does not guarantee that any new performance strategies which are developed in such discussions will be more task-effective than members' private, prior hypotheses about how the task should be done. In particular, it appears that relatively unstructured discussions of strategy should facilitate task performance only when (a) members' a priori preferences about strategy are suboptimal for the task at hand and/or (b) the task is sufficiently complex or subtle that overt discussion of strategy will reveal ways of proceeding which otherwise would not have been considered.

c. Task redesign. Both the diagnosis-feedback and the process consultation approaches require group members to address directly the norms of the group about performance strategy, and both require some intervention by an outside consultant or researcher. A third general approach to the change of group norms about strategy—task redesign—deals with norms more indirectly, and minimizes the role of "outsiders" in the group itself.

In particular, the group task can be designed so that it requires, suggests, or provides cues which prompt specific ways of going about performing the task (e.g., Solem, 1974). For example, if a task which requires the assembly of small mechanical devices is physically laid out in a linear fashion, with chairs and equipment for group members placed along the side of a long narrow table, members will almost certainly assume that they should form an assembly line and will proceed to operate as if that is the optimal way of doing the task. But if materials are arranged around a circular table, with a full complement of equipment provided for each member, a strategy of individual assembly probably will be adopted instead, with just as little overt discussion.

At the extreme, of course, a task can be designed so that no discretion about strategy is left to the group; members are informed not only what their goal is, but exactly how to proceed to achieve that goal. If the task-provided instructions are indeed optimal, the group will be well-protected against ineffective strategies. This is the approach often taken by consultants who attempt to increase the creativity of groups. In the synectics approach, for example, group members are provided with tasks and exercises which specify exactly what strategies group members are to use in working on the task—strategies that are designed explicitly to facilitate the production of original solutions (Prince, 1970). The ultimate success of the group, of course, depends partly on the adequacy of those task-specified strategies.

While, from an "engineering" perspective, task redesign offers considerable appeal as a device for helping group members utilize more task-effective performance strategies in their work, responsibility for the strategies remains outside the group itself. The task serves simply to get potentially task-effective patterns of behavior underway; whether such behaviors will "stick" and become incorporated into the normative structure of the group depends in large part on whether members find the behaviors instrumental for achieving their goals. Diagnosis-feedback and process consultation, on the other hand, probably are less efficient in any given instance, but have the advantage that the group itself "owns" the new procedures it has devised. Moreover, as they use these techniques, members may learn some group relations skills or develop some norms that can be usefully applied to other tasks, or in other groups.

2. Member Effort

There is considerable evidence that the effort members expend on a group task, like the performance strategies they use, is powerfully affected by the norms of the group, especially when members value their membership in the group (e.g., Schachter, Ellertson, McBride, & Gregory, 1951; Seashore, 1954). But less is known about what determines the direction of group norms—that is, whether the norms will encourage high or low effort on the task (Vroom, 1969).

We suggest that whether a group develops a norm of high or low effort depends substantially on the quality of the experiences members have as they work on the task—and that these experiences in turn are largely determined by the task itself. For example, if members find the task activities frustrating and unpleasant, they are likely, after some time, to notice the adverse attitudes of others in the group—and perhaps to share these reactions verbally. Gradually, through such interaction, group members may come to an implicit or explicit agreement that the best way to minimize the unpleasantness they experience is to minimize the energy invested in doing the task. If, on the other hand, mem-
bers find their work on the task exciting, fulfilling, or otherwise rewarding; these experiences also are likely to be shared with one another, and a norm of high effort may be the result.

To the extent that member experiences do depend partly on the task itself, then it may be useful to consider task redesign as a strategy for increasing member effort, rather than attempting to address directly norms about effort. To do the latter, in many cases, would be attacking the outcropping of the problem rather than the problem itself.

The question, then, is what task characteristics are likely to lead to high commitment by group members to work hard on the task. Research data are available that identify the characteristics of jobs in organizations that prompt individuals to become personally motivated to work hard and effectively (cf. Hackman & Lawler, 1971; Hackman & Oldham, 1974). In particular, it has been shown that individual task motivation is enhanced for many people when their jobs are high on five job dimensions: (a) skill variety—the degree to which the individual does a number of different things on the job involving use of his valued skills; (b) task identity—the degree to which he does a whole and visible piece of work; (c) task significance—how much the results of work on the job will affect the psychological or physical well-being of other people; (d) autonomy—the personal initiative and discretion the individual has on the job; and (e) feedback—the degree to which the person learns as he is working how well he is doing (Hackman & Oldham, 1974).

If a group task were designed with these or similar characteristics in mind, one might expect to observe an increase in the motivation of individual group members to exert high personal energy in carrying out the task. And, over time, group norms about effort should change to become consistent with the level of commitment individual members feel for their work. The final result should be a considerable increase in the overall level of effort the group expends on the task (a “process gain”), and this increase should be reinforced by the emergent normative structure in the group. Again, as with most of the possibilities for enhancing group effectiveness introduced in this section, research tests remain to be done.

3. Member Knowledge and Skill

Consider now tasks for which the utilization of member knowledge and skill strongly determines group effectiveness. As was suggested earlier, the single most powerful point of leverage on group effectiveness for such tasks is simply group composition; a group made up of competent people will do better than a group composed of less-competent members (cf. Varela, 1971, pp. 153-157). But if it is assumed that the group originally has been composed to maximize the level of member task-relevant talent present, what can be done to maximize the utilization and development of that talent in the service of the group task? How, for example, can the group operate to minimize the inevitable process losses that occur when information is combined and member contributions are evaluated? Or to increase the level of knowledge and skill of individual members so that the total pool of talent available to the group also increases? Or to develop patterns of interaction that increase the group’s capability to deal effectively with similar tasks in the future?

Achieving such states of affairs in a group is neither a straightforward nor a short-term proposition. Groups usually have difficulty dealing effectively with individual differences in competence. When weighting of individual contributions is done in the group, difficult issues of interpersonal competitiveness, evaluation, and differential status come very quickly to the fore. Dealing with such issues openly is, for most members of most groups, highly threatening and anxiety-arousing. Group members are likely to erect protective shells around themselves in such circumstances, and as a result the group as a whole loses access to much of the talent already present within its boundaries. And the chances of members using one another to learn genuinely innovative patterns of behavior—or to seek out and internalize knowledge that initially is foreign to them—are very slim indeed.

How might a group break out of such a self-defeating pattern of behavior? Possibly the group task could be structured to require explicit and overt treatment of individual differences in knowledge and skill; or perhaps interventions could be made to help members become aware of (and possibly change) existing group norms specifying how such matters are handled in the group. Such interventions can ensure that issues of individual differences in knowledge and skill are brought to the attention of group members—and can prompt explicit discussion of them. But successful resolution of such matters once they have surfaced may be quite another matter (cf. Bion, 1959). Consider, for example, a group in which (for whatever reasons) members resolved to "deal openly with individual differences in competence on the task, and evaluations of the worth of the contributions of all members." In all likelihood, this resolve would serve more to drive group members into their protective shells than to open the hoped-for new avenues of personal and interpersonal learning.

What are needed, it seems, are interventions that will help group members learn how to deal effectively with issues of individual differences within the group, and to create a climate that supports and facili-
tates learning and sharing of learning. And this suggests the need for a rather long-term program of process consultation (or "team building") in which members gradually build a climate of interpersonal trust within the group, leading to a reduction in the level of personal threat they experience in the group setting. As such a climate develops, members may become better able to experiment with new forms of behavior and become increasingly ready to engage in the usually risky and anxiety-arousing activities required to extend one's knowledge and skills in a public setting. Even in the long term, however, there is no guarantee that the group will develop into a site for individual learning and heightened sharing among group members. The process is a fragile one, and fragile things break.

What is relatively certain is that, if such a long-term team-building program is successful, the members themselves will almost invariably be changed as a consequence—that is, they will perhaps become more risk-taking and experimenting in their behavior, and more willing to tolerate stress and anxiety in the interest of increasing and sharing their personal knowledge and skill. When such a point is reached, if it is reached, the group will have become "re-composed," not by the removal of incompetent members and substitution of more competent ones, but instead by changes in the attitudes, skills, and behavioral styles of the existing members.

So we come full circle for tasks on which group effectiveness is strongly determined by the level and utilization of member knowledge and skill. At the first level, we have noted that the most efficient and straightforward means of improving group effectiveness on such tasks is through group composition: Put good people in the group. To move beyond that level, we believe, also requires attention to the composition of the group, but now through changes within the group itself—changes in the attitudes and interpersonal styles of individual members. The characteristics of individual group members are important to the success of groups faced with this type of task. And we believe that the configuration of those characteristics often can be improved—both by the way members are selected for the group, and by the kinds of learning experiences they are provided after they are in it.

4. Summary

Table IV shows graphically the relationship between (a) the three summary variables which have been postulated as important proximal causes of measured group performance effectiveness, and (b) the three "input" factors which have been proposed as points of leverage for influencing the summary variables. As is suggested by the figure, any one of the input factors potentially can effect a change in any of the summary variables. Yet when the intent is to generate improvements in group effectiveness by influencing what happens in the interaction process of the group, some input factors appear to be more useful than others. In particular, we have focused on how task performance strategies are especially open to improvement by alteration of group norms; how the effort members bring to bear on the task is especially influencable by the design of the group task; and how the effective utilization and development of task-relevant knowledge and skill within the group may be especially dependent upon group composition.

The first thrust of our proposed three-prong approach to research on group effectiveness focused on the functions of group interaction; the second examined the role of input factors in changing group interaction and group effectiveness. We now turn to the final theme, which addresses the kind of research that we believe is needed to extend knowledge about ways to improve the effectiveness of task-oriented groups.

C. Experimentally Creating Nontraditional Structures and Processes in Groups

1. Rationale

Hoffman (1965), in a chapter on group problem solving in an earlier volume of this series, noted the emphasis in small group research on
identifying and studying "barriers" to group creativity. While acknowledging that such barriers must be overcome if creative problem solving is to be promoted, he also argued for efforts directed to "inventing and testing new ways of encouraging creative group problem solving" (p. 127). Such research, he suggested, should not only advance our knowledge of group process but, when successful, should be of considerable practical value to society as well.

In the decade since Hoffman made his plea, almost no systematic research has addressed the question of "inventing and testing" ways of improving group effectiveness. The suggestions and speculations we have offered in the previous section, then, can be seen as a reprise of Hoffman's theme.

Many of our proposals, if implemented, would require group members to engage in activities of a nontraditional nature. Suggestions were made, for example, for the design of nonstandard types of tasks, for the creation of norms that differ from widely shared expectations about "appropriate" behavior in groups, and for the development within the group of new personal and interpersonal styles for dealing with individual differences in member competence.

The impact of such structures and styles on interaction process and on group effectiveness must remain, for the moment, a matter for speculation, because systematic research on their functions and dysfunctions has not been carried out. Moreover, their effects usually will not even be observable in existing, naturally occurring groups, simply because such structures and styles evolve rarely, if at all, without outside stimulation or assistance.

The implication, then, is that to learn about the positive and negative effects of these (and other nontraditional) structures and styles, it will first be necessary to create these conditions within the groups under study. And this, of course, requires a research strategy that does not accept as given either the kinds of structures within which group typically operate, or the ways group members naturally behave within these structures. We are, in effect, suggesting a resurrection of the "action research" tradition which proved so vital to small group research earlier in this century.

2. An Example

An example of change-oriented research, in this case involving alteration of performance strategies by manipulation of the norms of the group, has been reported by Hackman et al. (1974) and is summarized below.

a. Design. The study was designed to determine (a) whether or not task-appropriate discussions of performance strategy could be induced in groups through a relatively straightforward intervention into the norms of the group, and (b) the effects of such discussions (if successfully created) on group productivity and member relationships for two different tasks.

Three intervention conditions were created in four-person groups. In the "strategy" condition group members were asked to spend the first 5 minutes of the (35-minute) performance period explicitly discussing their goals and how they might optimally work together to maximize their productivity. As a guide to this discussion, members were given a "preliminary group task" which provided general guidelines for how a group might go about discussing performance strategy. In the "anti-strategy" condition, group members were asked explicitly not to "waste any time" in discussions of procedure or strategy, but instead immediately to begin productive work on the task. In the control condition, no special instructions were given, other than the exhortation (given in all conditions) to try to maximize group performance.

The experimental task required group members to assemble various kinds of electrical components described on "task order lists" given each group member. Each type of component had a dollar value, and productivity was measured by the total worth in dollars of the components produced by the group. Group members were informed that, since they could not complete everything on all lists in the time period allowed, they would have to make some decisions about which components to produce.

The basic task was identical in all conditions; i.e., the dollar value of each type of component was the same on all task order lists, and the total number of components of each type on the lists given each group was the same. The way the task information was distributed among group members, however, was experimentally varied. In the "unequal information" condition, the task order lists of group members contained different quantities of the various types of components that could be produced. In the "equal information" condition, the quantities specified on the lists of group members were identical. It was expected that any beneficial effects of discussions of performance strategy should appear much more powerfully in the "unequal" than in the "equal" task condition, since in the "equal" condition each member had all relevant information personally at hand. Therefore, members presumably could decide on their own the most profitable components to produce.

In the "unequal" condition, on the other hand, group productivity potentially could be impaired if members did not share information and coordinate their decisions about what components to produce.

In sum, the design involved three intervention conditions (strategy,
antistrategy, and control) crossed by two task conditions (unequal information and equal information). Dependent measures (in addition to productivity) included observations of the group process and member reports of their experiences in the group.

b. Findings. The strategy intervention did successfully alter the interaction process of the experimental groups. Measures of strategy-relevant interaction revealed that nearly all the groups in the strategy condition spent the first portion of their work time in a discussion of task strategy, and virtually no strategy discussion occurred in the antistrategy groups. Moreover, the groups in the control condition also did not discuss strategy spontaneously, thus confirming the prediction that groups rarely engage in discussions of strategy on their own initiative.

The effects of the interventions on group performance effectiveness are depicted in Fig. 4. As predicted, groups that received the strategy induction performed especially well in the unequal task condition. Groups that received the antistrategy induction performed especially well in the equal task condition. Of special importance is the finding that performance was substantially lowered for the strategy groups in the equal task condition, and for the antistrategy groups in the unequal task condition. Control groups were low for both task conditions.

It appears, therefore, that the strategy intervention was indeed helpful to group performance effectiveness, but only when the task actually required coordination and sharing among group members; when the task could be done equally well without such coordination, strategy discussions led to a deterioration of performance—perhaps because such discussions served little useful purpose and simply wasted group members' time. Similarly, exhortation to a hard-working, task-oriented set (as induced in the antistrategy condition) increased effectiveness when there was no objective need to coordinate and share among group members, but impaired performance when such a need was present (i.e., as in the unequal information condition).  

Both positive and negative “spin-off” effects of the strategy induction were noted. While groups in the strategy condition reported more conflict and more interpersonal problems than did other groups, they showed higher flexibility in their approach to the task and a considerable ability to change procedures in midstream if the group found itself doing poorly. In addition, in the strategy condition all group members tended to see themselves as high on personal leadership and influence, whereas in both the control and the antistrategy groups, members viewed themselves as not having much influence on the group. Thus, the strategy intervention seems to have created a condition of participative leadership in which all members had considerably more “say” in what the group did than was the case for the other conditions.

In sum, the research suggests that it is in fact possible to create new, nontraditional norms in groups (at least having to do with matters of task performance strategy) and to trace the effects of those norms on group effectiveness. Moreover, observations of the interaction of the groups in this study showed both that group process was powerfully affected by the interventions made, and that changes in interaction process led directly to measurable differences in group productivity.

III. Conclusions and Implications

In this concluding section, we suggest some implications of the proposals made and findings reported in this paper. Our comments are arranged in two groups: those having to do with matters of research and theory on group effectiveness, and those relevant to action steps or interventions aimed at improving group effectiveness.

A. IMPLICATIONS FOR RESEARCH AND THEORY

1. The Elusiveness of General Theory

While there have been numerous attempts to integrate findings about group effectiveness and to draw general-level conclusions about behavior in groups, so far no general theory of small group effectiveness has appeared.

It is important to note that the “strategy” groups had the methodological cards stacked against them: they spent at least 5 minutes (one-seventh of the total work time) in planning activities that were not directly productive, while other groups were using this time to actually produce components. Thus, the performance of these groups reflects a rate of productivity that greatly exceeded that of other groups once the assembling of components actually began.
We suggest here the possibility that no single theory can encompass and deal simultaneously with the complexity of factors that can affect group task effectiveness. Instead, it may be necessary to settle for a number of smaller theories, each of which is relevant to a specific aspect or phase of the performance process, or to performance effectiveness under certain specified circumstances. One intent of the present paper has been to help structure the domain within which such smaller theories might be developed. In particular, we have attempted to examine in some depth (a) the role of group interaction process as a major determinant of group productivity; (b) some selected “input” variables which we see as powerful influences on group performance and thus as useful points of leverage for changing performance—whether directly, or through the group process; and (c) three “summary variables” (effort, performance strategies, knowledge and skill) which are proposed as devices for summarizing the most powerful proximal causes of group task effectiveness.

A general framework suggesting how these three classes of variables interact in the task performance sequence is shown in Fig. 5. By further researching this input-process-output sequence for different types of tasks (here classified in terms of the summary variables), we believe that additional understanding can be achieved which will aid both in predicting and in changing group effectiveness in a large number of performance settings. But in any event, a general and unified theory of group

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effectiveness, we believe, is currently out of reach—and is likely to remain so.

2. Research on Group Effectiveness

In the introductory section of this chapter, we pointed out that many social psychologists have reached rather pessimistic conclusions about the efficiency and performance effectiveness of interacting groups. A working assumption of this chapter, however, has been that it is in fact possible to conduct research that will demonstrate how groups can be designed and managed so that they perform much more effectively than they would “naturally.” To design and carry out such research, we believe the following will be required:

1. It will be necessary to attempt to create effective groups in order to understand their dynamics. Merely describing what happens in existing, natural groups is unlikely to generate knowledge useful for improving group effectiveness because some of the most critical ingredients of truly effective groups may never appear spontaneously in groups allowed to develop naturally. As a start toward the design of such research, we have proposed several ways in which “input” factors might be experimentally modified to see if they generate more task-effective group processes and higher quality outputs. In particular, we have suggested that by appropriate alteration of group task design, of group norms, and of the way groups are composed, it may be possible to increase the coordination and level of member effort, the task-appropriateness of group performance strategies, and the utilization and development of the task-relevant knowledge and skill of group members.

2. It will be necessary to design experiments in which group processes are allowed to vary more widely than typically is the case either in laboratory experimental groups or in naturally occurring groups in field settings. We have suggested that, while group interaction process is a crucial mediator of input-output relationships in groups, its functions often are not visible because group tasks and group norms tend powerfully to constrain the richness of the patterns of interaction which can emerge. Fuller understanding of the determinants and effects of group interaction will require both “opening up” or revising the norms people bring to the group about what is and is not appropriate behavior in task-oriented groups, and more attention to the sampling and experimental variation of group tasks than heretofore has been the case in experimental research.

3. Finally, it will be necessary to adopt a more differentiated view of the functions of group interaction as a mediator of input-performance relationships than previously has been the case. Given that group interac-
tion may serve quite different functions in affecting performance effectiveness for different kinds of tasks, methods of coding and analyzing interaction process will have to be developed which are specifically appropriate to the kind of group task on which the group is working.

3. Methodological issues

If research is to be carried out according to the suggestions outlined above, a number of new methodological tools and techniques will have to be developed, especially in the areas of task description and group process measurement.

a. Interaction coding systems. We have proposed that interaction coding systems, to be useful for tracing how group processes mediate between input conditions and group effectiveness, should have two attributes. First, they should be capable of dealing with interaction process as it develops and changes over time, rather than generating simple frequency tallies or summaries averaged over an entire performance period. And second, they should address at a relatively molar level those aspects of interaction which are uniquely important in affecting performance outcome for the class of task being performed. In terms of the summary variables outlined in the present chapter, for example, one should use systems that assess the activities of group members (a) to coordinate and increase member efforts, or (b) to select and implement appropriate performance strategies, or (c) to assess, weight, and develop the knowledge and skills of members. Which of these aspects of the interaction process would actually be measured, of course, would depend on which (or which combination of) summary variables is operative for the task being performed. While systems having the attributes described above do not presently exist, we believe that their development would be a most useful addition to the set of tools available to researchers interested in studying small group effectiveness.*

b. Task classification systems. The problem of task description is heavily intertwined with the problem of measuring group interaction, as Roby pointed out in 1963:

The thesis will be argued here, first, that any major advance in theory and research on small group problems will depend very heavily on progress in measuring task properties and group processes. Second, it will be argued that these measurement problems are closely interrelated—that is, a clarification of the essential attributes of group tasks will contribute significantly to a better understanding of the important aspects of group process, and conversely (pp. 1-2).

Despite repeated calls for increased attention to task description and classification—and despite a number of attempts to develop schemes for differentiating among group tasks—no satisfactory methodology for describing group tasks has yet emerged (cf. Davis, 1969, Chapter 3; Hackman, 1969; Roby & Lanzetta, 1958; Shaw, 1971, Chapter 9; Zajonc, 1965). One of the difficulties in describing tasks is that they serve, simultaneously, at least two functions which must be described in different terms.

1. Task as stimulus. Through direct instructions about what is to be done, and through cues present in the task materials, tasks affect member behavior in the group setting. Examples earlier in this paper have shown that task design can prompt high or low effort on the part of group members, attention to matters of performance strategy or ignoring these issues, and so on. The stimulus properties of group tasks can be described on an almost endless number of dimensions, in terms ranging from the molecular (e.g., the way lights in a stimulus display are configured) to the molar (e.g., the overall judged challenge of a task). The job of task description is difficult, and will inevitably involve a good deal of “bootstrapping,” because a strictly empirical/inductive approach is too large and cumbersome, and because theories that can specify a priori the most critical stimulus characteristics of tasks for given research questions are not yet available.

2. Task as moderator. As is noted throughout this paper, tasks moderate process-performance relationships in groups; that is, what kinds of behaviors serve to increase or decrease task effectiveness depend, often to a substantial extent, on the nature of the task itself. Thus, any attempt to understand process effects on performance must take account not only of group interaction, but also of the contingencies in the task that determine the kinds of behaviors that contribute to effectiveness for that task (cf. Hackman, 1969).

Such contingencies can be referred to as “critical task contingencies”—i.e., they specify what types of behavior are critical to successful performance on the task in question. Which of the three summary variables discussed in this paper are relevant to performance effectiveness on a given task depends on these task-based contingencies, as is shown in Fig. 5. Thus, if a researcher were attempting to understand or change group effectiveness in a given instance, he would deal only or mainly with those summary variables that were objectively important in determining effectiveness for the task at hand.
In practice, it often is possible to determine which of the three summary variables is likely to be most important for a given task simply by inspection—e.g., by asking, "If greater effort (or different performance strategies, or different levels of knowledge and skill) were brought to bear on this task, would performance effectiveness be likely to change markedly?" But ultimately it will be necessary to know what it is in the task itself that determines whether such questions are answered affirmatively or negatively. For only when critical task contingencies can be described in terms of the task itself will it become possible to generate unambiguous and objectively operational propositions about the interactions among task characteristics, group processes, and group effectiveness.

B. IMPLICATIONS FOR ACTION

1. The Elusiveness of General Interventions

There is no dearth of small group intervention techniques available to the practitioner interested in trying to change group behavior and task effectiveness. Yet, just as we have argued that there is not likely to be a general theory of group effectiveness, we also eschew the notion that there can be any single intervention package that will be universally helpful in improving group effectiveness.

Consider, for example, small group "team building," a popular intervention technique which focuses on the interpersonal relationships and social climate present in the group. Team building may be of great use in helping group members develop the capability to utilize member knowledge and skill effectively on a task. For this reason, the technique may aid performance effectiveness on tasks for which this summary variable is operative. But team building may be actively dysfunctional, at least in the short term, for tasks where the operative summary variable is effort, because the energies of group members are siphoned away from the task itself and applied instead to the exciting and involving interpersonal processes which take place during the team-building process. Similarly, redesign of the group task may aid effectiveness on tasks where the task immediately at hand, but rarely can they be incorporated readily into the on-going process of the group (Hackman et al., 1974; Maier, 1963; Maier & Maier, 1957; Maier & Solem, 1952; Shure et al., 1962; Varella, 1971, Chapter 6).

What seems needed, then, are the following:

1. Development of interventions that are effectiveness-enhancing in the short term, and that simultaneously lead to alterations of the normal processes of the group such that the overall competence of the group as a performing unit is enhanced.

2. Development of a taxonomy of groups, tasks, and situations that specifies the potential utility of various interventions for different types of performance situations. Recent work by Herold (1974) offers some promising leads toward such a taxonomy. In the meantime, however, we believe that interventionists will have to rely on especially careful personal diagnoses of the task, the group, and the situation—and tailor their change-oriented activities to what those diagnoses reveal.

2. Toward Increased Self-Management by Task Groups

As techniques for modifying situations and intervening in group processes become known and tested, it is tempting for a consultant to a group (whether outsider or group leader) to use this knowledge, perhaps covertly, to move the group toward greater effectiveness. And,
Indeed, this "engineering" approach has been advocated and used with apparent success in some situations (Varela, 1971, Chapter 6).

We believe, however, that in the long term it is better if the group members themselves develop the skills and the understanding to manage their own development as a productive unit. This will lessen the reliance of the group on the continued expertise of the consultant, and often may increase the commitment of group members to the group and its goals—because they come increasingly to "own," and therefore care about, its processes and its products. Moreover, the problems of a group often are highly idiosyncratic, hinging on rather unique coincidences of people, tasks, and situations. Relying on specific advice and assistance from an outside professional on an on-going basis would, it appears, be a grossly inefficient way to improve the long-term effectiveness of the group.

There are two major—and quite different—hurdles to be overcome if a group is to gain increased self-control over its own task performance processes and increased competence in managing its performance activities. The first is development of heightened awareness of the determinants of group processes and group performance. The second is developing the competence (both technical and interpersonal) to respond adaptively to the newly understood problems and opportunities.

Outside assistance would seem to be critical in helping a group overcome both of these hurdles. Members must break out of the reactive stance most people assume in task performance situations and take a more active, seeking, and structuring orientation toward their task and interpersonal environment. This is unlikely to occur spontaneously, for reasons discussed at several points throughout this paper. It is, however, likely to become self-perpetuating, once the consciousness of group members about the determinants of their behavior is raised, assuming that they decide that they do in fact wish to take a more active stance toward the task and social environment. With the aid of a competent leader or consultant, the traditional implicit norm of reactivity can be replaced by a new norm of proaction—on the part of both individual group members, and the group as an interacting unit.

Group members themselves, for example, probably should be as involved as possible in diagnostic activities aimed at determining the demands of the task and the resources the group has at hand to work on the task. By participating in such diagnoses, members should achieve the fullest possible awareness and understanding of the factors that affect their own performance activities and their effectiveness as a group. They should, therefore, become increasingly well-prepared to engage in new activities intended to reduce their process losses—and to chart avenues for realizing previously unrecognized possibilities for process gains.

An especially critical point is reached when group members have become aware of the need for change and have developed the motivation to initiate and carry through specific changes. At this point, they may be in rather desperate need of assistance to learn how, competently, to do what they already want to do—and they may not be aware of many of the problems that they will face in implementing their plans. This is especially important for changes involving the internal process of the group: Merely wanting to be "less punitive in dealing with ideas," for example, while often an admirable goal and one that may be task-effective on many tasks, is extraordinarily difficult for most members of most groups to carry off successfully. Similarly, changing the task of the group—something most members of most groups take as an unalterable given—requires the use of personal and interpersonal skills which are not well-practiced. Again, members will require assistance in finding ways to carry out their intentions.

The challenge to the consultant is to help the group members raise their collective consciousness about what "might be" and to learn how to achieve their newly found aspirations; the challenge to the small group researcher is to provide, for the consultant and the group members alike, the knowledge and the tools that will help them get there from here.

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