THE DIFFERENTIAL IMPACT OF PARTICIPATION IN
LABORATORY TRAINING IN COLLABORATIVE
TASK EFFORT ON INTACT GROUPS
AND FRAGMENTED GROUPS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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

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P71
ACKNOWLEDGEMENT

The completion of any significant research effort is seldom the result of any single individual's effort. This is particularly true in this case. I have had considerable support and encouragement from a great number of people. While it is impossible to list all of those who contributed, I must recognize some of the major contributions.

Dr. Reed Powell, my primary advisor, has provided a major influence throughout my studies as well as on this particular research. His enthusiasm prompts one to attempt a seemingly impossible task. And then, his skillful guidance and assistance enables one to accomplish the impossible. I am deeply grateful for the opportunity to work closely with Dr. Powell.

Dr. Ralph Stogdill's influence will be demonstrated throughout my career. He has shown the importance of basing behavioral theories on well designed research rather than anecdotal case studies, and has provided guidance in the development of research methodologies. I am fortunate to have studied under Dr. Stogdill.

Dr. Charles Hicks provided guidance in the initial development of my field of study and contributed significantly to the quality of this research through his insightful questioning and his suggestions for improvement. I appreciate Dr. Hicks' help and assistance over the last two years.
Dr. Ted Hellebrandt has been the primary influence on my development for the last ten years. He first encouraged me to attend graduate school. He gave me my first opportunity to teach. He introduced me to consulting and has worked closely with me in numerous consultations. And, he encouraged me to return for the Ph.D. To a great extent, I am a product of his guidance.

I would also like to thank Ted for providing the subjects for this study and for coordinating the General Business Management Simulation play. And thanks to Ted and Paul Hersey for conducting the Training Laboratory for this study.

Jeane and Dave Rose have spent much time and effort typing and proofing both the draft and final copies of this paper. I greatly appreciate their contribution.

On a more personal note, my parents, Jerry and Lucille Carter, have been a constant source of encouragement. They have helped, both spiritually and financially, throughout my studies. I'm glad they're my parents.

Finally, my wife, Nancy, has been the source of my strength. She had provided encouragement and discipline, in equal measures, as needed. She has sacrificed, socially and materially, to enable the intense concentration my studies have required. The thesis is dedicated to her.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>General Hypotheses</td>
<td></td>
</tr>
<tr>
<td>Plan of Presentation</td>
<td></td>
</tr>
<tr>
<td>II. THEORY AND RESEARCH</td>
<td>8</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Laboratory Training: an Overview</td>
<td></td>
</tr>
<tr>
<td>Derivatives of Sensitivity Training</td>
<td></td>
</tr>
<tr>
<td>Laboratory Training: A Review of the Empiric Research</td>
<td></td>
</tr>
<tr>
<td>The Stogdill Model of Group Behavior</td>
<td></td>
</tr>
<tr>
<td>The Proposed Impact of Laboratory Training on Group Behavior</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>III. RESEARCH METHODOLOGY</td>
<td>44</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>The General Business Management Simulation</td>
<td></td>
</tr>
<tr>
<td>Laboratory Training in Collaborative Task Effort</td>
<td></td>
</tr>
<tr>
<td>Research Methodology</td>
<td></td>
</tr>
<tr>
<td>Null Hypotheses</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 1</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 2</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 3</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 4</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 5</td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis 6</td>
<td></td>
</tr>
</tbody>
</table>
IV. RESEARCH FINDINGS

Introduction
The Correlation Matrix
Hypothesis 1
Hypothesis 2
Hypothesis 3
Hypothesis 4
Hypothesis 5
Hypothesis 6
Summary

V. SUMMARY AND CONCLUSIONS

Summary
Conclusions

APPENDIX

I. ...................................................... 103
II. ......................................................... 121
III. ......................................................... 140
BIBLIOGRAPHY ........................................ 158
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Accumulated Gross Profit, year 1</td>
<td>61</td>
</tr>
<tr>
<td>2.</td>
<td>Research Design</td>
<td>63</td>
</tr>
<tr>
<td>3.</td>
<td>Spearman Rank Order Correlation of All Variables</td>
<td>70</td>
</tr>
<tr>
<td>4.</td>
<td>Increase in Scores on the Concept Test</td>
<td>74</td>
</tr>
<tr>
<td>5.</td>
<td>Increase in Preference for Initiating Structure Behavior</td>
<td>75</td>
</tr>
<tr>
<td>6.</td>
<td>Increase in Preference for Consideration Behavior</td>
<td>75</td>
</tr>
<tr>
<td>7.</td>
<td>Accumulated Gross Profit, General Business Management Simulation, Years 2-3½</td>
<td>78</td>
</tr>
<tr>
<td>8.</td>
<td>Increase in Stock Price, General Business Management Simulation, Years 2-3½</td>
<td>78</td>
</tr>
<tr>
<td>9.</td>
<td>Average Forecasting Error, General Business Management Simulation, Year 2-3½</td>
<td>79</td>
</tr>
<tr>
<td>10.</td>
<td>Member Perception of Increases in Group Productivity</td>
<td>81</td>
</tr>
<tr>
<td>11.</td>
<td>Member Perception of Increases in Group Drive</td>
<td>81</td>
</tr>
<tr>
<td>12.</td>
<td>Increase in Group Cohesiveness</td>
<td>83</td>
</tr>
<tr>
<td>13.</td>
<td>Increase in Satisfaction</td>
<td>85</td>
</tr>
<tr>
<td>14.</td>
<td>Increase in Initiating Structure Behavior by Formal Leaders</td>
<td>86</td>
</tr>
<tr>
<td>15.</td>
<td>Increase in Consideration Behavior by Formal Leaders</td>
<td>87</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

You've got to keep it in context. Hundreds of companies are sending executives off-site to labs but are not following up. So what happens? Say a man has a good experience. He comes back to the job full of new values -- and sits down in the same old crummy atmosphere he left a week before. He may be changed, but his environment isn't. How can he practice confrontation with a boss and a secretary and colleagues who don't even know what it's all about? In a few weeks he's either completely dazed or has reverted, in self defense, to the old ways. 1

In the past few years, many practitioners and behavioral scientists have reached conclusions similar to those expressed by Davis regarding laboratory training courses. They have been convinced by research results and clinical studies that laboratory training courses can provoke changes in knowledge, attitudes, and skills in some individuals from some organizations. They further conclude that any changes in knowledge, attitudes, and skills are more likely to be transformed into lasting behavioral changes on the job and increased organizational effectiveness if family, or actual working groups, attend the same laboratory than if an individual attends a stranger laboratory.

Shepard suggests that stranger laboratories are not as effective as family laboratories for inducing changes in interpersonal and

intergroup relationships in organizations.\textsuperscript{2} He states:

When organization change, as well as individual learning is the objective, the stranger laboratory is not a powerful method. ... The induction of change in interpersonal and intergroup relations within an organization is a problem of organizational re-education, not simply individual re-education. ... Stranger training sends an individual back to the organization with a changed viewpoint, but confronted with an unchanged structure of interpersonal work relationships. 'Work team' or 'family group' training builds a new structure of work relationships at the same time it provides a new viewpoint to group members.\textsuperscript{3}

Argyris reaches a similar conclusion.\textsuperscript{4} He reports the results of a study to determine the effects of a laboratory he conducted for some divisional presidents of a large organization. The study indicates that there was considerable fade-out of the results of the training after ten months. Argyris suggests that the participants had not lost their capacity to behave in a "more open and trusting manner,"\textsuperscript{5} but they had to suppress some of their learning because the corporate president, other divisional presidents who did not participate in the laboratory, and other important work group members, did not understand their new behavior. He concludes that, particularly for the improvement of processes which require unstructured group functioning such as unprogrammed decision-making, "Laboratory education with the family,


\textsuperscript{3}Ibid.


\textsuperscript{5}Ibid.
or actual working group, has the greatest possible payoff. 6

The thrust of these and other similar propositions is that in-
dividuals who participate in laboratory training with individuals from
other work groups or from other organizations are induced to experiment
with new behavior and change some of their opinions, attitudes, and/or
beliefs. When they return to their normal work environment, they find
that their new opinions, attitudes, and beliefs and their new behaviors
are dissonant with work group norms. Since their work group is their
primary reference group for work related behavior, they gradually
change their opinions, attitudes, beliefs, and behavior until they are
once again consonant with group norms. At this point, any change in-
duced by the laboratory training has faded out.

The second portion of the proposition is that when all members
of a work group participate in a laboratory training together, their
opinions, attitudes, and beliefs change consistently. And, they start
to develop new, common structures of interpersonal relationships and
group functioning. When they return to their jobs, all members have
adopted new opinions, attitudes and beliefs and they provide reference
group support for each other. In addition, they implement and continue
to develop new methods of group functioning. Thus they are able to
improve group functioning on the job and work together more effective-
ly, solving problems and making decisions.

Although there has been popular acceptance of this proposition,
there has been little empiric test of its validity. Only one study

6 Ibid.
has been located which provides even an indirect test of the argument. Deep, Bass, and Vaughan, in a study of conflict resulting from sub-group loyalties, found evidence which did not support the argument.  

Deep, Bass, and Vaughan studied 93 graduate business students who were assigned to nine teams in the Carnegie Tech Management Game. All 93 subjects had participated in quasi-T-group training 15-30 weeks earlier. The subjects were assigned to teams based on whether they had participated in the same T-group. Three teams were made up of intact T-groups. That is, all of the teams members had participated in the same T-group. Three teams were made up of five subjects who had participated together in one T-group and five who had participated in a second T-group. In the other three teams, a maximum of two subjects had participated in the same T-group.

Measures of management team effectiveness included company profit, cost of poor planning, forecasting error, and gain in stock price. In addition, subjective data regarding group contact ease, individual contact ease, perceived familiarity, perceived openness, perceived similarity, and cohesiveness were collected.

Management teams made up of intact T-groups performed less well than did management teams made up of subdivided T-groups. The researchers concluded that those in teams from intact T-groups were overconfident of one another. There was little conflict in the teams, thus

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8 Ibid.
necessary follow-up and control functions were not performed.

While this study tends to disconfirm the basic argument, several internal and external validity problems limit its impact. Internally, while the intact T-group teams consistently performed less well on effectiveness measures than did the divided T-group teams, only one measure, forecasting error indicated a statistically significant difference.

The management teams which served as the setting of the research were not formed until 15 weeks after the completion of the laboratory training. Thus, at the time the laboratory was being conducted, the management teams had no history; no established norms of group functioning. The activities and discussions in the T-groups could not, therefore, center on the unfreezing of existing group norms and the development of new, more effective group process norms. In short, since the participants in the laboratory were not a work group at the time the laboratory was conducted, it could not be considered a family laboratory.

Further, the effectiveness of the laboratory design used is open to question, being what is generally called split T-groups. The laboratory was spread over a 15 week period with the T-groups meeting for two hours once each week. Reports of studies on the effectiveness of split T-groups have consistently shown them to be an ineffective medium of change.9

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Finally, their explanation of the results obtained was based largely on limited clinical observation. Since the study was structured to investigate the effects of subgroup loyalties rather than to test the argument presented here, measures of significant variables were not included in the data collection.

Thus, the question still remains. Is laboratory training of intact work groups a more effective medium of change than laboratory training using individuals who are members of different work groups? This study is designed to provide a valid test of the question.

General Hypotheses

The major research question of the study is:

Do work groups that participate in laboratory training as an intact work group perform more effectively after the training than those that are fragmented and whose members participate with individuals who are not members of their regular work group?

This question will be tested and answered by the testing of the following general hypotheses:

Hypothesis 1. There is a greater fade-out of the effects of laboratory training if work group members participate as a fragmented group than if they participate in training as an intact work group.

Hypothesis 2. Work groups that participate in laboratory training as an intact work group are more effective in making unprogrammed

decisions than those that participate in the training as a fragmented group.

Hypothesis 3. Members of work groups who participate in laboratory training as an intact work group perceive a greater increase in their work group effectiveness than do members of work groups who participate in the training as a fragmented group.

Hypothesis 4. Work groups who participate in laboratory training as an intact work group increase more in cohesiveness than those that participate in the training as a fragmented group.

Hypothesis 5. Members of work groups who participate in laboratory training as an intact work group increase more in satisfaction from normal participation with their work group than do members of work groups who participate in the training as a fragmented group.

Hypothesis 6. Formal leaders of work groups that participate in laboratory training as an intact work group increase more in both initiating structure and consideration behavior than do formal leaders of work groups that participate in the training as a fragmented group.

**Plan of Presentation**

The remainder of this study will be presented in four chapters. Chapter two will present an overview of the theory and research on laboratory training and group behavior relating to the stated hypotheses. Chapter three will describe the methodology used in the study. Chapter four will consist of presentation and discussion of the research results. Chapter five will summarize the study and consider the implications of the research for laboratory training theory.
CHAPTER II

THEORY AND RESEARCH

Introduction

All segments of the management sciences have as one of their primary objects the improvement of effectiveness of work groups and operating organizations. Numerous approaches, primarily reflecting the backgrounds and biases of their various proponents, have been used. All of these approaches involve introducing change in the organization in some manner.

Leavitt has classified the various approaches to introducing changes in an organization into structural, technological, and humanistic approaches.\(^1\) The concern in this study is with the introduction of change through humanistic approaches, and specifically with the impact of one of the most prevalent of the humanistic change techniques, laboratory training.

This chapter will consist of an overview of laboratory training theory, a review of research on the impact of laboratory training, a review of small group theory, and a theoretical model of the impact of laboratory training on group behavior and functioning.

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Laboratory Training: an Overview

Sensitivity training, the classical form of laboratory training, was developed primarily by Lewin, Lippitt, Beene, and Bradford in the mid 1940's. The major thrust and the guiding principles came from Lewin and his work in group dynamics and field theory. Other influences, however, had a major impact on the philosophy of sensitivity training. Both Beene and Bradford were students of John Dewey's philosophy of education and were significantly influenced by his concept of social intelligence. Lippitt had studied under Piaget and shared his concerns for the education of children and innovations in education. In addition, Lippitt did his graduate study under Lewin and thus carried his philosophies into the evolution of sensitivity training (Lewin died in February, 1947, just six months before the first National Training Laboratory sensitivity training sessions). All of the initiators of sensitivity training were influenced by Mary Parker Follett's studies of integrative solutions to conflicts in public and private administration, by Freud's work and particularly his concept of psychotherapy, and by Moreno's concepts of group therapy and psychodrama. Bradford notes particularly that he and Lippitt had met and observed Moreno and that they borrowed quite heavily from his work.

3 Ibid.
4 Ibid.
5 Ibid.
in their training exercises.\textsuperscript{6}

The nature of sensitivity training is perhaps best characterized by the National Training Laboratory in their brochure, \textit{This is NTL}.\textsuperscript{7}

Human relations training focuses on the individual, the small group, and the organization. A major training goal is increased competence in the many roles each participant plays - on the job, in the community, even in the family. The objectives include the individual satisfactions derived from the full use of one's capacity and the organizational strength achieved through good working relations. The training activities of the laboratory combine to make it possible to experiment with new and more effective ways of learning and new ways of behaving.

The exact goals of sensitivity training vary from one laboratory program to another. There are, however, sufficient similarities that we may generalize cautiously concerning the more frequently expressed goals.

Sensitivity training is based on a specific set of values. Although these may not be stated, they are implicit in the design and may be adopted as values and be influential in the subsequent behavior of participants. These values may be viewed as the "meta-goals" of sensitivity training.\textsuperscript{8}

Science: Laboratories are structured around a spirit of inquiry; an orientation toward truth and discovery. The participants are encouraged to experiment with new behavior and analyze objectively the feedback data on the new units of behavior to discover what might be learned.

\textsuperscript{6}Ibid.

\textsuperscript{7}This is \textit{NTL}, Washington, D. C.: National Training Laboratories, 1963.

Democracy: The participants are encouraged to display authenticity in their interpersonal relationships; to be oneself rather than act out a pre-determined role. They are encouraged to collaborate: to work together to achieve the greatest degree of effectiveness rather than adopt authoritarian approaches in their behavior. They are encouraged to confront conflict: to explore to find the causes rather than suppress or ignore conflict.

There are typically stated goals in each sensitivity training session. The following are some of the more common goals:9

1. Increased self insight or self awareness concerning one's own behavior and its meaning in a social context.

2. Increased sensitivity to the behavior of others. This is quite close to the concept of empathy.

3. Increased awareness and understanding of the types of processes that facilitate or inhibit group functioning and the interactions within groups.

4. Heightened diagnostic skills in the social, interpersonal, and intergroup situations.

5. Increased ability to intervene successfully in the group situation in order to increase member satisfaction, effectiveness, and productivity.

6. Increased ability to analyze one's own interpersonal behavior in order to help oneself and others achieve more effective and satisfying interpersonal relationships.

The central activity in sensitivity training is the T-group.10 T-groups generally contain from five to fifteen participants and one or

9Ibid.

10Ibid.
two staff trainers. Unlike typical group discussion in learning situations, T-groups are highly unstructured. The trainers provide little formal leadership. There is no prepared agenda. There is no assigned task for the group to complete.

This absence of structure creates a vacuum which the members of the group fill with their own behavior. Under the guidance of the trainer, the group starts to explore the produced behavior and use it as a basis for learning. To keep the explorations within bounds, the trainer, early in the life of the group, explains the objectives or desired outcomes and emphasizes that the focus for learning is on the "here and now" behavior of group members. T-groups are directed not to indulge in the explorations of past life experience which influences the way people behave.

Sensitivity training sessions also include some theory sessions, either formal presentations of theory or informal inputs by the trainer in regular group meetings. In addition, role playing, case studies, and research projects are sometimes included as individual or T-group activities.

**Derivatives of Sensitivity Training**

In the past ten years, many derivatives of sensitivity training have emerged. While these have grown out of sensitivity training, they have also borrowed heavily from other sources. The two primary directions the derivatives have taken are represented by personal growth laboratories or encounter groups and task-oriented laboratory training.

Encounter groups are based primarily on humanistic psychology.
Unlike traditional sensitivity training, the concern is not on the group dynamics and the individual's adjustment to the group. Rather, the emphasis is on the "growth" of the whole man, or as Schutz characterizes it, increased "Joy." ¹¹ The assumption is that people are non-authentic in their relations and this non-authenticity leads to feelings of guilt and repression which limits the growth of the individual.

To obtain growth or joy, the individual must be made aware of his thought and his feelings, and he must learn to feel free to express these thoughts and feelings openly. ¹² To this end, the group and particularly the trainer, focuses on the individual, getting him to express his feelings about himself and others as deeply and as spontaneously as possible. ¹³ Often the individual is directed by the trainer to express these feelings nonverbally with or to another member of the group. And, rather than being restricted to the "here and now," the group will venture into the "there and then" to help the individual understand the source of his feeling and free himself of the induced anxieties.

In short, encounter groups are much like group therapy. Many of the same techniques are used and many of the same goals are sought. The primary difference is that the target of the therapy is not the mentally ill, but simply the normally neurotic.

Task-oriented laboratory training is much more relevant for


students and practitioners of organizational behavior. It is directed toward the improvement of interpersonal effectiveness and group functioning. While the individual is a partial target of change, the goal is not to change the individual's personality but to improve his functioning with others in a task oriented group.  

14 In many task oriented laboratory training sessions, the groups are composed of intact working groups from an operating organization.

The central activity in a task oriented laboratory remains the T-group or as they are often called the D-group. 15 The induction of structure in the group comes from the assignment of specific tasks to be completed by the group within fixed time periods. The process generally involves the completion of a task by the group and then a review of how the group operated, how each individual contributed to the group or detracted from its accomplishment, and what steps should be taken to make the group more effective.

This learning process is repeated several times during the laboratory. It is expected that the concentration on group processes and interpersonal functioning will teach the individual how to intervene effectively and improve group functioning in his normal work group on the job.

Thus, the supporters of laboratory training propose that it can


be used as a technique to improve individual effectiveness in an organizational setting, increase work group effectiveness, and ultimately improve the functioning of the organization.

How well have their claims been supported? Can laboratory training be used to increase work group and organizational effectiveness? In the next section, empiric research germane these questions will be reviewed.

Laboratory Training: A Review of the Empiric Research

Stock reviewed seventeen primary research efforts designed to determine the impact of laboratory training (primarily sensitivity training) on individual learning and change.\(^{16}\) She found that, on the whole, the research was inconclusive. She noted that both the limited amount of empiric research in the area and the methodological limitations of much of the research limited the usefulness of the findings.

Her review did indicate that all of the following concepts had been influenced by laboratory training: perception of self, affective behavior, congruence between ideal self and self precept, self insight, sensitivity to the feelings and behavior of others, role flexibility, sensitivity to group decisions, diagnostic abilities, behavioral skills, self confidence, and approaches to diagnosing organizational problems. These factors had been shown to change, however, only for, "some people

under certain conditions."  Of the studies reviewed which quantified change, 60-75% of the participants were shown to have gained from laboratory training in some way.

House critically reviewed some twenty research efforts. Although he found the research on participant characteristics to be somewhat inconclusive, he did find that laboratory training can influence behavior. In twelve studies of the impact on personal characteristics, he found no evidence of personality change, significant re-orientation of perceptions of others, significant shifts in attitudes toward more open-mindedness, some improvement in sensitivity to the feelings of others, and movement toward the opinion that the ideal leader should place more emphasis on consideration and less emphasis on initiating structure. In ten studies of the impact of laboratory training on behavior, he found that the training induces more consideration for subordinates, less dependence on others, less demand for subservience on others, and better communication through more adequate and objective listening.

Dunnette and Campbell conducted a more recent critical review of reported research. They reviewed nine studies relative to the impact of laboratory training on attitudes, outlooks, and orientations. They

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17 Ibid., p. 434.


found only limited indication of any significant impact. They noted that eight studies showed only slight evidence supporting an impact on self awareness and interpersonal sensitivity. They felt that only a single study by Dunnette in this area was well conducted and provided positive results. They reviewed five studies on the impact on job behavior. They found that observers indicate that there are changes in behavior on the job, but they objected to the use of open-ended questionnaires with observers as a measuring device. They reviewed five studies on organizational outcome of laboratory training and found no conclusive results.

Dunnette and Campbell do not conclude that laboratory training is without value. Rather, they indicate that the quality of the research conducted to determine its value has been minimal. They note that much of the research is anecdotal in nature, that when instruments are used they are often subject to too much bias, and that control groups are seldom used. Thus, they conclude, only after much research of a sufficient quality is reported can the value of laboratory training be adequately assessed.21

That such research reviews do not definitely confirm the validity of laboratory training as an educational technique should not be surprising. As was noted earlier, different laboratories have different


21 Dunnette and Campbell, op. cit.
objects and thus produce different results. Trainers vary in their abilities and effectiveness in leading the group in the learning experience. And, some participants with certain personal characteristics find the laboratory type of learning to be more conducive than do others. The reviews do confirm, however, that some types of changes can be induced through laboratory training and that for some individuals this type of learning is quite effective.

If the position that laboratory training is a valid educational technique is accepted, the significant question then becomes, how much of any learning that occurs is transferred by the participants and continued in their on-the-job behavior? Can the participants transfer their learning from the laboratory environment and increase their interpersonal skill and improve effectiveness in their work groups?

There seems to be some doubt. Blake, an original proponent of sensitivity training and a major user of task oriented laboratory training makes this point. Other executives return from human relations training programs highly enthusiastic. In at least some of these cases, there does seem to be real evidence of increased insight and individual learning. The problem for these men is one of

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22 Schein and Bennis, op. cit.


24 Ibid.

implementation. Unless they have considerable organizational influence and/or a new supportive environment climate, they will probably be forced back into old behavioral patterns and relationships."

This position is consistent with the results of the classic study of human relations training for foreman conducted by Fleishman, Harris, and Burtt. 26 They found that changes in attitudes and behavior induced by non-laboratory human relations training faded out after ten months. They conclude, "the foreman is more responsive to the day-to-day climate in which he operates than any special course of training he may have been given." 27

Oshry and Harrison used the Problem Analysis Questionnaire with 46 subjects at the beginning and end of a two-week laboratory training course. 28 The laboratory training was conducted by the staff of the National Training Laboratories. The Problem Analysis Questionnaire is designed to measure aspects of participant diagnostic approaches to interpersonal work problems confronting them in organizational life. The investigators were attempting to determine if participants in the laboratory could transfer any of their laboratory learning to their regular work environment.

They found that the diagnostic orientations the participants

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26 Edwin Fleishman, Edwin Harris, and Harold Burtt, Leadership and Supervision in Industry, Columbus: The Ohio State University, Bureau of Educational Research, Monograph Number 33, 1955.

27 Ibid.

learned about themselves in relation to their T-group did generalize to learnings about self in relation to work. They found that, at the end of the laboratory training, the participants' work world seemed to be more human and less impersonal, the participants saw clear connections between how well interpersonal needs are met and how well the work gets done, and they saw themselves clearly as the most significant part of their work problems. But, the subjects saw no clear connection between these new perceptions and how they could translate them into action on the job. The investigators thus expressed concern that the learning which occurred during the laboratory would not be transferred back to the job environment.

In a second study Harrison found additional data questioning the transferability of laboratory learning. He used the Person Description Questionnaire, before and after, with 10 executives from one company who had participated in laboratory training in an attempt to evaluate the impact of the training. A control group of eight executives from the same company was used. While these executives were from the same company, it should be noted that they were not trained as an intact group. The person description questionnaire measures the number of interpersonal and emotional characteristics and the number of intellectual and technical characteristics the subject used to describe another person. It was expected that the participants in laboratory training would use more interpersonal and emotional charac-

teristics to describe others after having participated in the training.

The investigators found that the participants used significantly more interpersonal and emotional characteristics to describe other participants in the laboratory after the training (29%-43% and 29%-38%). However, when describing ten other associates who had not attended the laboratory, there was no increase in the use of personal and emotional characteristics. There was no change in the control group. Harrison concludes that the participants became more sensitive to the interpersonal characteristics of fellow participants, but these changes did not transfer to their perceptions of others in the participants' organization.

These studies raise serious questions about the utility of laboratory training for inducing on-the-job behavioral changes and increasing organizational effectiveness. But, two factors should be noted first, the studies are primarily projective in nature. They are measuring subject states and perceptions at the end of the laboratory and making inferences about the probability of changed behavior after the subject returns to his normal environment. Second, the subjects in the studies were not trained with their intact work groups. They participated in laboratory training with persons with whom they had no association or with persons from the same organization, but from other work groups.

As noted in Beene, Bennis, and Chin, "Isolating the individual from his organizational context, his normative structure which rewards him and represents a significant reference group makes no sense. In fact, if it sets up countervailing norms and expectations, it may be
dysfunctional to both the organization and the individual."

Friedlander suggests that training the participants in their intact work groups is a more valid educational strategy. He notes that laboratory training in intact groups,"... is directed at helping the individual bridge the hazardous, yet critical transition from his trainee role to the 'real life' role of his back home environment, and at preventing the dissipation of the training effects."  

These propositions suggest that laboratory training in work groups should induce greater on-the-job behavior change and contribute more to increased work group effectiveness. Several studies provide data on the impact of laboratory training in intact work groups.

Boyd and Ellis conducted a study of the impact of an in-company training program in a Canadian Utility. They were attempting to compare the effects of laboratory training with the effects of a conventional lecture case training program in human relations of the same length. A control group was used.

They assessed change by interviewing the supervisor, two peers, and two subordinates of each participant, six weeks and six months after the training. They were attempting to obtain descriptions of


31 Friedlander, op. cit.

32 Ibid. p. 290.

any overt behavior changes in the subjects. In addition, a questionnaire, the Manager Behavior Description, was used and produced results consistent with the interviews.

Boyd and Ellis found that the observers of the control group reported behavior changed for 34% of the control group. Change in on-the-job behavior was reported for 50% of the participants in conventional training, and for 65% of the participants in laboratory training. Concerning the nature of the changes, the investigators reported that learning about other people occurred in both types of training. But, learning about group behavior was limited to the participants in the laboratory. They note that the laboratory group became aware of such things as loss of contributions to the group through failure to listen, the effect of pressure in creating resistance within the group, and how unstated personal goals could impede group work.

Valiquet studied 49 subjects from a large business organization who participated in family laboratories one year after they completed the training. The 49 were randomly selected from a larger population from four divisions. He used the Behavior Changed Description Questionnaire developed by Miles to measure change in behavior on the job. The Behavior Change Description Questionnaire is an open


ended questionnaire, completed by the participant and a number of his work associates, in this case five, which reports any changes in on-the-job behavior in a period of time following the laboratory.

Valiquet found significantly more behavior changes reported for the experimental group than for the control group. Most of the changes were classified as increases in operational skills in interpersonal relationships and in diagnostic awareness of self. Specific changes noted were: better sharing of ideas, more cooperative and tactful, more encouragement of participation by others, more acceptance of others and their ideas, and more insight into self.

Both of these reports were studies of classical sensitivity training impacts. In both cases, the primary measure of impact was self reporting of behavior changes and reports of behavior changes by associates. This method of measurement can be criticized for its potential bias. The associates reporting changes are aware that the experimental population has participated in laboratory training and that the control group has not. Further, there is no measure of changes in group functioning to indicate if any valid changes in behavior by the experimental population has contributed to, or detracted from work group effectiveness. The following two studies, both utilizing task oriented laboratory training with intact work groups, address themselves more directly to the impact on the group.

Barens and Greiner studied the impact of a change effort in a single plant of a major corporation conducted by Blake and Mouton.\(^\text{36}\)

\(^{36}\)Blake, Mouton, Barnes, and Greiner, op. cit.
Eight hundred managers and technical personnel from the plant participated in task oriented laboratory training with individuals outside their own work group. They then participated in task oriented laboratory training with their own work group. The task oriented laboratory training with the intact work group had as its major goal the improvement of work group functioning. As this training was being conducted, there was an ongoing program of goal setting and intergroup conflict resolution.

Data collection began about one year after the laboratory training programs were initiated (1962). At that time all participants had completed both laboratory training programs. Data were collected on changes in productivity and total profitability, practices and behavior, and perceptions, attitudes, and values.

The investigators found that total plant productivity (total productivity/number of employees) had increased from index 103.9 to index 131.3 from 1962 to 1963; index base 199, 1960. In the same time period, controllable costs decreased from index 94.1 to index 86.2. They found that the average number of meetings attended by managerial personnel increased 31% during the year. Forty-nine percent of the managers reported improvements in the way they worked together with their boss. Fifty-five percent reported improvements in the way they worked together. Sixty-one percent reported improvements in the way their work group worked with other work groups.

To determine if any changes had occurred in the managerial styles employed by the formal leaders of work groups, all managers
made three assessments of the managerial style common in the plant; one of 1958 (five years earlier) one of 1963, and one of their preference for the future. They characterized the managerial style in the company in 1958 as 35% soft polarized (high consideration), 29% hard polarized (high initiating structure), 14% integrated (high on both consideration and initiating structure) and 22% compromise (medium on initiating structure and consideration). They characterized the style in 1963 as 31% hard polarized, 14% soft polarized, 40% integrated, and 15% compromise. Their preference for the future was 22% hard polarized, 10% soft polarized, 57% integrated, and 11% compromise.

They noted several changes in group norms, on the basis of a paper-and-pencil questionnaire. Groups developed greater negative attitudes toward members who gave more importance to friendly relations than to solving work problems, who preferred to keep their opinions to themselves rather than present them to other group members, who preferred to do a job alone rather than with other members of the group, and who compromised when disagreements arose within the group.

The data and analysis regarding gains in productivity and profitability are too global in nature to be a good measure of gains in work group effectiveness. There are too many uncontrollable factors which could have influenced the data. The remaining data are more attitudinal in nature and are based on subject recall of past states of nature. To the extent that the recall is not biased, the results do indicate that task oriented laboratory training had the effect of
influencing managerial style (movement toward high on both consideration and initiating structure), influencing the participants preferred or ideal managerial style (high on both initiating structure and consideration) influencing work group norms, and contributing to the improvement of work group effectiveness.

Friedlander evaluated the impact of task-oriented laboratory training on the effectiveness of ongoing work groups. Each of the groups participated in the training as an intact work group. There were 31 experimental subjects and 60 control subjects.

The task-oriented laboratory training sessions lasted four to five days. The objectives of the laboratory were to identify problems facing the work group and the reason for their existence, to invent possible solutions to the problems, and to plan implementation of the solutions. Friedlander also noted, "within the problem solving context, the group explores numerous inadequacies in interpersonal and intergroup processes which directly or indirectly influence the group."38

Friedlander used the Group Behavior Inventory (developed by Friedlander) before and six months after the laboratory to assess changes in the group. The Group Behavior Inventory is a paper-and-pencil questionnaire which obtains the subject's perception of six dimensions of group process: Group effectiveness in problem solving through a creative team approach; approach to the leader, the extent

37 Friedlander, op. cit.
38 Ibid.
to which the group can establish an unconstrained and comfortable relationship with their leader; extent to which the members have mutual influence over other members and the leader; personal involvement and participation in group meetings; the extent to which the group members trust and have confidence in one another; and a general evaluation of the meeting as good and valuable.

Friedlander's results indicate that there was a significantly greater increase by the experimental groups in group effectiveness, mutual influence, and personal involvement. There was no significant increase in trust or evaluation of group meetings, and a slight non-significant decrease in leader approachability.

The results of both of these studies, then, indicates that participation in task oriented laboratory training as an intact work group may increase the effectiveness of the work group. The Barnes study indicates that, in addition, participation may encourage the formal leader of the work group to increase both his consideration and his initiating structure behavior. Friedlander's study does not support this finding, but this may be the result of the nature of the laboratory. The Blake Laboratory concentrates on leadership style and encourages the adoption of a style high on both dimensions. The Friedlander study indication of an increase in mutual influence might be interpreted as an increase in cohesiveness. This interpretation would be supported by the increase in participation.

The studies are limited, however, because of the nature of the instruments used to measure group effectiveness. They were successful in measuring the participant's perception of group effectiveness, but
it is not possible to conclude that the groups actually did increase in effectiveness. Only the Barnes study attempted to use hard data and these data were too global, too susceptible to competing hypotheses, to be reliable.

Thus, it is possible to conclude on the basis of the research reviewed thus far that participation in task oriented laboratory training as an intact work group can influence participant's perception of managerial behavior, participant's perception of work group effectiveness, participant's indication of ideal leader behavior, the cohesion of the work group, and it may increase work group effectiveness.

To provide a more complete analysis of the impact of laboratory training it is necessary to turn to the theory of small group behavior.

The Stogdill Model of Group Behavior

Stogdill has developed an open system theory of small group behavior based on three classes of variables; inputs, mediators, and outputs. Input variables are performances, interactions, expectations, and task materials. Mediator variables are operations, interpersonnel, structure, and satisfaction. Output variables are productivity, drive, and cohesiveness.

39 The material for this section was drawn largely from Ralph M. Stogdill, Individual Behavior and Group Achievement, New York: Oxford University Press, 1959, Ralph M. Stogdill, Managers, Employees, and Organizations, Columbus: The Ohio State University, Bureau of Business Research Monograph No. 125, 1965, and Ralph M. Stogdill, A Behavioral Model of Organization, (Mimeo) Columbus: Ohio State University, 1969.
Because of the exactness of the theory, each of the behavioral variables should be defined.

Performance is a response which may be identified as one of the actions that constitutes the operations of an interaction system; any action by an individual that identifies him as a member of a group.

Interaction is the reaction of two members to each other in such a manner that the response of each is a reaction to the behavior or the other; an action-reaction system.

Expectation is readiness for reinforcement; a function of the estimated probability of an outcome, the estimated value of the outcome, and orientation responses toward the outcome.

Operations are the sum of all the members' performances in processing the task materials of the group; all actions and interactions which maintain the structure and accomplish the purpose of the group.

Structure is the differentiated role system that results from the mutually reinforced expectations of the members regarding the task that each is to perform and the pattern of interactions he is to exhibit.

Interpersonal is the psycho-social exchange system that develops between member and members as well as between members and the organization.

Productivity is the change in expectancy values created by group operation; it may be measured in terms of the change in values resulting from the processing of task materials.

Drive is freedom from restraint in action, enthusiastic action, toward the attainment of an objective.
Cohesiveness is the maintenance of, or ability to maintain, group structure.

Stogdill decomposes the input variables and proposes relationships between the decomposed input variables, mediators, and output variables. Performances are decomposed into task performance, nontask performances, and performances in observation of group norms.

Interactions are decomposed into task related interactions, nontask related interactions, and mutual (reciprocated) interactions.

Expectations are decomposed into expectations regarding; task performances, nontask performances, goal values, status positions in the group, task urgency, freedom to act and decide, contributions to be made, returns from the organization, mutual liking, observances of norms, reference group support, and discontinuity of membership.

Satisfaction is decomposed into satisfaction with contributions made, and satisfactions with returns from the organization.

Operations (O) are a function of task performances (Pt) of group members operating on task materials (T) used by the group. Operations are conducted more actively when task expectations (Et) and task related interactions (It) are high and nontask expectations (En) and nontask related interactions (In) are low.

\[ O = Pt \times T \times \frac{Et + It}{En + In} \]

Interpersonnel (I) is a function of nontask interactions (In) and nontask performances (Pn). Personal relations and exchanges are

\[ \text{Stogdill, op. cit. 1969.} \]
more congenial when members have high expectations for mutual liking (Eg) and nontask expectations (En) and low expectations for status differences (Ea) and norm conformity (Ev).

\[ L = \frac{In \times Pn \times \frac{Eq}{Ea} - \frac{En}{Ev}}{En - Ev} \]

Structure (Z) is a function of expectations regarding status positions (Ea) and observance of group norms (Ev). Structure is high when performance in observance of norms (Pv) and expectations regarding contributions (Eb) are high in relation to task related performances (Pt) and interactions (It).

\[ Z = \frac{Ea \times Ev \times \frac{Pv + Eb}{Pt + It}}{Pt + It} \]

Productivity (k) is a function of group operations (O) in terms of goal expectancy values (Eg) and expectations regarding contributions (Eb). Productivity is high when these variables are high and when expectations relative to norm conformity (Ev) and freedom of action (Ef) are high in relation to expectations relative to status (Ea) and satisfaction with contributions (Sb).

\[ K = O \times (Eg + Eb) \times \frac{Ev + Ef}{Ea + Sb} \]

Drive (D) is a function of interpersonnel (L), expectations of task urgency (Eu) and expectations of freedom of action (Ef). Drive is high when these variables are high and when expectations regarding contributions (Eb) and returns (Er) are high in relation to satisfaction with contributions (Sb) and returns (Sr).

\[ D = L \times (Ev + Ef) \times \frac{Eb + Er}{Sb + Sr} \]
Cohesiveness (C) is a function of structure (Z), reciprocated interactions (Im), and satisfaction with returns (Sr). Cohesiveness is high when these variables are high and when expectations of reference group support (Ew) and nontask demands (En) are high in relation to task related expectancies (Et) and expectations regarding discontinuity of membership (Eh).

\[ C + Z \times (Im + Sr) \times \frac{Ew + En}{Et + Eh} \]

Stodgill, in his development of the theory proposed three hypotheses regarding the relationships between the output variables. These hypotheses are generally supported by empiric research.

1. Productivity and drive are positively correlated.
2. Productivity and cohesiveness, under routine operating conditions, are negatively correlated.
3. Drive and cohesiveness may be either positively or negatively correlated.

The Proposed Impact of Laboratory Training on Group Behavior

The expected impact of laboratory training on group behavior centers primarily on expectations, with some impact on performance and interaction. Participation in classic sensitivity training effects primarily the social or nontask related inputs. It would effect expectations regarding nontask performance, expectations regarding mutual liking, expectations regarding ego returns from the organization, nontask performances, and nontask related interactions.

\[^{41}\text{Stogdill, op. cit. 1959.}\]
Participation in task oriented, laboratory training should have more impact on task related inputs. It should effect expectations regarding task performance, expectations regarding contributions to be made, expectations regarding task urgency, task performances, and task related interactions.

Both types of laboratory training, because of the concentration on group activities and the meta goal of laboratory training mentioned earlier, would effect status positions in the group, freedom to act and decide, and expectations regarding observance of norms.

In this study, the concern is centered more on the expected effects of participation in task oriented, laboratory training. It is particularly concerned with any expected difference in the effects as a result of a work group participating in the training as an intact group, in contrast to the work group being fragmented and each individual participating in the training with relative strangers.

Participation as a fragmented group should effect expectations regarding task performance (concentration on task increased), contributions to be made (all individuals contribute to the maximum extent), expectations regarding task urgency (the task is of primary concern to the group), status position within the group (a decrease in status differentials), freedom to act and decide (increased participation in decisions by all group members), and observance of group norms (increased concern with acceptable behavior by group members). In addition, it is possible that there would be an increase in task performances and an increase in task related interaction. These changes, however, would have to occur after the group members had
reformed into their original work group.

These effects are also expected as a result of participation as an intact group. In addition, expectations of reference group support would also be increased. Since group norms would be considered directly in the laboratory, there would be an expectation that the group would provide reference group support for any changed norms in normal group operations. There would also be an expected impact on task performances and task related interactions. These changes would occur in the laboratory and, it is expected, would be transferred to normal group operations.

The primary difference between participation as an intact group and participation as a fragmented group is in the transfer of these immediate effects of participation in laboratory training to normal, ongoing group operations. Transfer should be significantly facilitated by participation as an intact group. Norms of the group are attacked directly and may be altered during the training. Any changes in expectations are fairly consistent, member to member. Increased task performance and task related activities induced in the training should continue in normal operations. And, members can expect reference group support for any changes in expectations, performances, and interactions initiated during the laboratory as they return to ongoing group activities in their normal environment.

If fragmented groups are to incorporate changes into ongoing group activities, they must reform after the laboratory. Although all members may have participated in the training, their expectations may not have changed consistently because of variations in patterns
developed in their various D-groups. Their group norms are attacked only indirectly, and any changes in group norms have to occur during the redevelopment of the group. While members may have increased task performances and task related interactions in laboratory groups, these will now have to be incorporated into their normal operating group. And, while attempting to redevelop the group, members cannot expect the group to provide reference group support for changes in expectations, performances, and interactions learned during the training.

Thus, it is proposed that participation in laboratory training may have some impact on groups who have participated either as an intact group or a fragmented group. But, because of the factors mentioned above, the impact on intact groups should be considerably greater.

The expected impact on inputs, to the extent that they are transferred to normal group functioning, should lead to some changes in mediator and output variables.

An increase in task performance, expectation of task performance, and task related interaction should lead to an increase in operations. And this, in combination with increased expectations of contribution, norm conformity, and freedom of action should lead to increased productivity.

The proposed decrease in nontask performance and nontask related interactions may lead to some decrease in interpersonal. But, it is proposed that the increased expectations regarding task urgency and freedom of action and increased expectations regarding contributions and return will offset the decrease in interpersonal
and lead to increased drive.

Increased expectation of observance of norms and expectation of contribution and any increased performance in observance of norms should lead to increased structure. This will be moderated somewhat, however, by increased task performance and task related interaction. To the extent that structure is increased and reciprocated interaction and satisfaction with returns is increased, an increase in cohesiveness is expected.

As was noted, a tendency toward these changes is proposed for both intact groups and fragmented groups participating in laboratory training. The impact should be, however, significantly greater for intact groups than for fragmented groups. Two threats to the theoretical model just proposed should be noted.

Central to the proposition that laboratory training will have a greater impact on intact groups than on fragmented groups is the proposition that changes in members of intact groups will be more consistent. Some research would indicate that this consistency, if it leads to greater homogeneity, may be dysfunctional to group effectiveness.

Bass and Dunteman recomposed members of heterogeneous groups participating in sensitivity training, into homogeneous groups, according to their scores on Bass’s Orientation inventory. The recomposed groups were totally made up of individuals who were self oriented, interaction oriented, or task oriented. Each of the homogeneous groups

had a two-hour meeting after which they were dissolved. After the meeting the subjects completed a questionnaire comparing their participation in the homogeneous group with their heterogeneous group.

Interaction-oriented groups rated their homogeneous group much higher than their heterogeneous group. They felt it was a better group, it worked harder, it had clearer goals, and the members felt "joined up." The homogeneous groups of the other two orientations much preferred the heterogeneous groups. But, Bass indicates that, while the interaction-oriented members felt good about their homogeneous groups, they were not as effective as the other homogeneous groups, and they in turn were not as effective as the heterogeneous groups.

It should be noted, that the orientations Bass investigated are personality characteristics. There is considerable doubt that laboratory training has a significant impact on personality characteristics. Task oriented laboratory training, in particular, is concerned not with changing personality but with increasing interpersonal effectiveness. The changes encouraged would be more directed toward increasing interpersonal compatibility. Katzell, et. al. investigated the impact of interpersonal compatibility on problem-solving groups. They had three member groups of students play a modification of the twenty questions parlor game. Interpersonal compatibility was induced

into the groups. All subjects were given a personality inventory and members of compatible groups were told that their group had been formed on the basis of the inventory; that the inventory indicated that they were quite compatible. The non-compatible groups were told that, because of a lack of subjects, it was impossible to put them into a compatible group. In addition, compatible groups were all made up of members of the same sex. Non compatible groups were mixed sex. The results indicated that high compatible groups took less time to complete their task, and that they required fewer questions.

Thus, if the laboratory is inducing increased interpersonal compatibility, and not homogeneous personalities, there should be no fear of dysfunctional effects on group effectiveness.

The second, and perhaps major, threat to the model is in regard to the nature of the impact on output variables. The model proposes that participation in a task oriented training laboratory should increase group productivity, group drive, and group cohesiveness. The proposed increase in all three output variables is not consistent with the Stogdill theory. Stogdill proposes that, under routine operating conditions, productivity and cohesiveness are negatively correlated.44

There are conditions, however, in which productivity and cohesiveness are positively correlated. Stogdill had eight observers rate the degree of cohesiveness and drive exhibited by both the home and visiting team on each play for six football games.45 Two observers

44 Stogdill, op. cit. 1959.
45 Ralph M. Stogdill, Team Achievement Under High Motivation,
rated every play by the home team, both offense and defense; two rated every play by the visiting team; two rated every offensive play by both teams, and two rated every defensive play. The measure of productivity used was yards gained. He found that all output variables were positively correlated under these conditions. He concludes that under conditions of high motivation, when all inputs are intensified, there can be a positive relationship between productivity and morale. But, he cautions that these high motivation conditions can seldom be maintained hour after hour and day after day. He notes, "If a football game lasted eight hours, rather than one hour, the pace and character of the play would be profoundly changed despite all methods that ingenious coaches might invent to intensify player inputs of effort and goal striving." 46

Blake and Mouton propose that strong leadership can create a motivational climate in a work group that will sustain both productivity and cohesiveness. 47 They indicate that leader behavior that is high in both initiating structure and consideration, what they call 9,9 or team leadership, can create conditions where group standards are high and where group members are committed to group goals, work together to accomplish these goals, and receive individual satisfaction from the accomplishment of group goals.

Columbus: The Ohio State University, Bureau of Business Research, Research Monograph Number 113, 1063.

46 Stogdill, op. cit. p. 73-74.

There is some limited support for the Blake proposition. Berkowitz studies the effects of standards of production and cohesiveness on productivity. Using thirty-four college males, he created four conditions: high standards of production and high cohesiveness, high standards of production and low cohesiveness, low standards of production and high cohesiveness, and low standards of production and high cohesiveness. The task for each group member was cutting large rectangles from heavy cardboard. Cohesiveness and standards of production were manipulated by the experimenter. Post experimental questionnaires and interviews indicated that the manipulation was successful.

The high standard of production and high cohesiveness condition produced the greatest productivity. An analysis of variance indicated that cohesiveness itself had no positive impact on productivity. But, the interaction between standards of production and cohesiveness did have an impact on productivity.

Darling, Gross, and Martin studied thirteen small women’s residence units organized under the auspices of the University of Minnesota. They were attempting to isolate factors associated with the productivity of groups. The experimental groups were asked to prepare a report: a plan for better cooperative living in the village. Five cash prizes were awarded for the best reports. Five faculty


members acted as judges. The experimenters found that aspects of cohesiveness were positively correlated with productivity.

A second report of the study reveals additional enlightening implications. Each cottage (unit) had elected a formal leader (president). This report emphasized the effects of formal leadership on the group. Strength of formal leadership was measured by asking each girl in the cottage to name the girl in her cottage she considered to be the outstanding leader of their group. When more than fifty percent of the girls identified the formal leader, the group was classified as having strong formal leadership (five groups). Otherwise it was classified as a weak formal leadership group (eight groups). They found, using the same measure of productivity, that the groups with strong formal leadership were more productive than those with weak formal leadership. In relation to the previous report of the study, there was some indication that the formal leadership groups were more cohesive (a significantly lower dislike ratio). The analysis of these two reports of the same study and the positive relationship found between both strength of leadership and cohesiveness provides some support for the Blake proposition. There is some indication that the interaction of strong leadership and high cohesiveness may have a positive impact on productivity.

Thus, it can be proposed that task-oriented laboratory training which encourages formal leader use of strong leader behavior and high

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standards of production can lead to increases in both productivity and cohesiveness, at least for a short period of time.

**Summary**

To summarize the theory and research reviewed, it is possible to make the following propositions:

1. Laboratory training can induce some types of changes in individual behavior and group functioning.

2. There is less fade-out of the effects of laboratory training and more transfer of learning to the job environment if work groups are trained as intact groups than if individual members of work groups attend separate laboratories.

3. Participation in a task-oriented laboratory which emphasizes leadership style can encourage leader choice of leader behavior which is high in both initiating structure and consideration.

4. Participation in a task-oriented, instrumented laboratory can contribute toward increased group productivity, drive and cohesiveness with productivity and cohesiveness both being emphasized under conditions of strong leadership.

5. The impacts proposed in three and four above will be greater if all members of a group participate in the training together, as an intact group, than if individual members participate in the training with members of other groups, as a fragmented group.
CHAPTER III

RESEARCH METHODOLOGY

Introduction

In her review of the research on the impact of laboratory training in 1964, Dorthy Stock noted that the quality of the research and the methodologies employed were not of the highest caliber.\(^1\) Robert House, in his review in 1967, was also critical of the quality of research in the area.\(^2\) Dunnette and Campbell in their 1968 review were even more critical.\(^3\) They found much of the research to be anecdotal in nature or clinical evaluations. They found little research that they felt met scientific standards. They indicated, "The scientific standards for properly evaluating training experiences are few in number and disarmingly simple, but... they are almost never put into practice."\(^4\)


\(^4\)Ibid, p.8.
In this study, a conscious effort was taken in the design of the study to maximize the validity of the findings and to provide for the maximum amount of consistent generalization of the conclusions. The hypotheses were tested and research questions answered using a laboratory experiment. The subjects for the research were seniors and graduate students in business policy classes at Ohio University. As a part of their normal coursework, the students participated in the General Business Management simulation. This simulation was adopted as the experimental task. The experimental treatment was the composition of the groups who participated in Training in Collaborative Task Effort, a two day instrumented laboratory training session. One third of the subjects participated in the training with members of their regular work groups as an intact group, one third of the groups were fragmented and the subjects participated in the training with members of other work groups, and one third of the subjects served as controls.

The choice between the use of a laboratory experiment and a field experiment was not simple. Several important factors were considered in the decision.

A major factor facing an investigator in a field experiment is that of controlling for competing hypotheses. 5 If an investigator finds changes in subjects' states after the application of an experimental treatment, he must be able to insure that the changes are a result of the treatment and not some other non-controlled change in

the subjects' environment. An obvious example came from the relay assembly test room section of the Hawthorne studies. The changes in output were not related to the experimental treatment, the introduction of rest pauses of varying frequency and duration, but to some social variable which was not controlled by the investigator.

Closely related to this problem is the difficulty of developing a reliable and valid measure of group effectiveness. The tangible output of a group, if indeed it has a tangible output, may be influenced by factors uncontrollable by the group. Thus, a group might be performing at a high level of effectiveness but, because of its interdependency with other groups, its level of effectiveness may not be reflected in its output. If there is no tangible output, effectiveness must be inferred by observation of perceptual measures, both of which can be questioned on the basis of validity and reliability.

A third problem is the generalizability of the findings from the experimental conditions to natural conditions. There is always the possibility that experimental manipulation in an ongoing organization may have a dysfunctional effect on the organization. Some organizations, fearful of this effect, are quite reluctant to cooperate and participate in field experiments. Thus, one must question if there is a difference between organizations which cooperate and those which do not, and if the findings from experimentation in one can be

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7 Whyte, op. cit.

8 Ibid.
generalized and applied in the other.

There is increased use, on the other hand, of laboratory experimentation to test theoretical propositions regarding organizational variables. The investigator can guard more effectively against competing hypotheses through direct control of non-experimental stimuli and random assignment of subjects and experimental conditions. This high degree of investigator control provides a high degree of validity to the experimental findings.

The usual criticism of laboratory experimentation with organization phenomena is that, because the laboratory employs an abstract and unnatural setting, the findings might not be generalizable to natural organizations. Weick suggests that this limitation can be avoided, however. He identifies five important organizational variables and suggests that, "experimental settings will be more relevant to organizational settings if they include some of these recurring characteristics." The five characteristics are size, duration, membership and career orientation, feedback, and task interdependence.

Fredericksen indicates that, "the use of simulation provides a way to retain an adequate amount of complexity and realism in an experimental situation while still permitting the experimenter to control conditions rigorously and to assign treatments to subjects in a


10 Ibid.
manner consistent with the design of his experiment."

The use of simulation as the experimental task in this study was designed to provide some realism in the experimental situation and it allowed the incorporation of at least four of the organizational characteristics Weicks suggested.  

The effects of organization size were incorporated into the experimental situation by allowing subgroup formation and through the establishment of a formal organization hierarchy by appointing a formal leader for each work group. Feedback of the results of their activities, the operating results of the simulation, was provided throughout the experiment. As the groups became differentiated, task interdependence developed and increased throughout the experiment. The effect of duration was obtained by requiring the work groups to participate in the simulation and to go through the process of group development before the experimental treatment.

While one cannot assure duplication of reality in a laboratory, every effort was taken to obtain the effects of organizational characteristics and approximate reality while obtaining maximum control, so that the findings would be both valid and generalizable.

Before providing a detailed description of the experimental methodology, the experimental task (the General Business Management Simulation) and the experimental treatment (the Training Laboratory in Collaborative Task Effort) will be described in greater detail.

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13 Weicks, *op. cit.*
The General Business Management Simulation

The General Business Management Simulation is a general management, total enterprise management game. It can be played by from four to twenty teams, called companies, each made up of four to six participants. The companies compete in a single interactive market; they manufacture and sell a single product which is identified only as a consumer expendable product.

The basic decision period in the simulation is a quarter of a year. Each company makes decisions each quarter concerning the following areas:

1. Price of product.
2. Quantity of product to be manufactured during the quarter, normal operations.
3. Quantity of product to be manufactured during the quarter, overtime operations.
4. Advertising and selling expenditures for the quarter.
6. Research and development expenditures.
7. Market research expenditures.
8. Plant expansion.
9. Liquidation of excess plant capacity.
10. Short-term investment of surplus funds.

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A more detailed description of the General Business Management Simulation including all instructions for participants, is provided in Appendix One.
12. Long-term debt financing.
13. The issue of common stock to obtain long-term financing.
14. Dividend payments to stockholders.

The General Business Management Simulation utilizes an interacting, deterministic model. The model is based on the following relationships: \(^{15}\)

1. When price of product increases (decreases), share of market decreases (increases).
2. When advertising and selling expenditures increase (decrease), share of market increases (decreases).
3. When product quality increases (decreases), share of market increases (decreases).
4. When plant capacity increases (decreases), unit costs decrease (increase) at full capacity operation.
5. As the cumulative dollar amount invested in research and development increases, the probability of obtaining a product improvement (increase in product quality) increases.
6. When operating policies result in an oversold condition, or inventory shortage, share of market decreases.

The basic market structure of the simulation is predetermined. The actual market, however, depends on the actions of the competing companies. It is a function of the basic market and of the effectiveness of the companies in creating a demand for their product. A single company's actual sales are a function of the total actual market and

that company's product quality, price, and advertising and selling expenditures, in relation to those of competing company's actions in these areas. A company's profitability is influenced by its sales, reductions in unit production costs through methods engineering, minimization of unit costs of production through producing at full plant capacity, minimization of inventory carrying charges through minimization of inventory, and other operating decisions normal to manufacturing firms. Thus, the sales and profitability of an individual company are a function of the actual market for the product and the relative effectiveness of that company's operating decisions.

Several measures of a company's decision making effectiveness are commonly used. These include: (1) level of profitability, (2) common stock price, (3) degree of error in forecasting results of decisions. Each of these measures are dependent on the decisions made and actions taken by the firm and thus reflect directly the quality of the decisions made by the group members.

A simulation such as the General Business Management Simulation, provides a quasi-realistic setting for research on group decision making. Groups have numerous available sources of information which can be used to guide their decisions. They receive feedback on the results of previous decisions which can be analyzed to provide guidance for future decisions. The members become differentiated and tend to specialize in their actions and points of view. Conflicts arise between conflicting points of view and the group must develop integrating mechanisms to resolve these conflicts. Involvement, because of the generally interesting nature of the task, is usually high. There are
various human and technical skills and abilities available within the
group and the group must function effectively to obtain maximum use
of these resources. And, of particular importance in this study, there
are objective measures of the effectiveness of group functioning and
group decision making.

Laboratory Training in Collaborative Task Effort

The Training Laboratory in Collaborative Task Effort is a two-
day instrumented, task oriented laboratory training session. The
training laboratory was developed and is conducted by E. T. Helle-
brandt and Paul Hersey.

The objectives of the Training Laboratory in Collaborative
Task Effort include changes in individual knowledge, attitudes, be-
havior, and ultimately increases in work group and organizational
effectiveness. Specifically:

1. Participants should gain knowledge of motivation and leader-
ship theory and particularly the 3-D model of leadership.

2. Participants should reject the belief that there is a
single ideal leadership style and should accept the belief that the
effective leader behavior style is the one that is most appropriate
to the specific situation.

3. Participants should learn to work effectively with others
in group situations and should be able to diagnose problems and provide

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16 Materials used in this seminar are included in Appendix Two.

17 Paul Hersey and E. T. Hellebrandt, personal conversation,
March 2, 1970.
suggestions for the improvement of group processes.

The focus in the laboratory, then, is task-oriented rather than ego oriented. The laboratory is directed toward improving the individual's effectiveness in interpersonal relationships and facilitating work group functioning and effectiveness, not toward changing individual personality or characteristics.

Like most instrumented laboratories, the Training Laboratory in Collaborative Task Effort utilizes both D-groups and theory sessions to increase interpersonal effectiveness. In addition, it utilizes feedback to improve interpersonal relationships and group functioning. The theory sessions are based primarily on the 3-D model of leadership presented in Management of Organizational Behavior. In each D-group meeting there is a pre-designed task which must be completed by the group within tight time constraints.

The general learning in the Laboratory Training in Collaborative Task Effort is as follows:

1. Each individual participant completes the pre-designed task.

2. The D-group meets, and under tight time constraints, completes the same task. All groups are encouraged to reach consensus rather than compromise solutions to their task.

3. A school solution to the task is provided by the trainers and the individuals and group score their solutions to the task. Their

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scores are compared to those of other individuals and D-groups in the laboratory.

4. The D-group then meets to evaluate its effectiveness as a group, working to solve problems and make decisions.

This pattern is repeated three times in the laboratory. It clearly emphasizes work group functioning and should help the D-groups increase their effectiveness in work group functioning.

Then, as a final activity, the D-group is asked to provide feedback on the behavior of each group member. The group selects, from a list of twenty-five statements, those five statements which best reflect each individual member's behavior in the group and those five statements which are least characteristic of each member's behavior. The group member receiving feedback listens as the group discusses his behavior and reaches consensus on the ten statements. There is little evaluative content in the feedback; it is simply a "this is the way we perceive your behavior" feedback. The individual inserts the evaluative content. If the feedback is disconcerting, it is expected that the individual will take steps to alter his behavior.

Feedback on individual behavior during the early part of the laboratory is not encouraged but it is not particularly discouraged. It generally does not occur because of tight time constraints on the completion of the task. It is not unusual, however, for conflict to develop in the group and, as a result of the conflict, for random feedback to be provided to the individual.

The Training Laboratory in Collaborative Task Effort has been used with numerous industrial organizations. It has been used with
both intact work groups and with stranger groups. The anecdotal evidence the trainers have collected leads them to believe it has been more successful when used with intact groups.\textsuperscript{19}

In this study, the Training Laboratory in Collaborative Task Effort will be the vehicle for the experimental treatment. The treatment is not the laboratory itself, but the composition of the groups in the laboratory. In one treatment situation, intact groups from the General Business Management Simulation were made in the laboratory D-groups and participated in all laboratory activities as an intact group. In the second treatment situation, members of one work group in the General Business Management Simulation were fragmented and participated with members of other work groups as the laboratory D-groups. In this situation, no two members from the same work group participated in the same D-group.

\textbf{Research Methodology}

The research design for this laboratory experiment was a randomized pre-test, post-test design with two experimental treatments. The experimental task was participation in groups of four to six in the General Business Management Simulation. The experimental treatment was participation in a training laboratory in collaborative task effort as intact work groups and participation in the training as fragment groups.

The randomized pre-test, post-test design protects against

\textsuperscript{19}Paul Hersey and E. T. Hellebrandt, personal conversation, March 2, 1970.
threats to internat validity. The only major threat to external validity is the possibility of interaction between testing and the experimental treatment. However, data on the major dependent variables, the operating results of the simulation decisions, was collected unobtrusively from normal operating records. Thus, the interaction effects on this variable were negligible and conclusions can be generalized with more confidence.

The independent variable for the study is the composition of D-groups in laboratory training in collaborative task effort, whether the subjects participate in the training as intact work groups or as fragmented work groups. The dependent variables are changes in subject knowledge of motivation and leadership theory, changes in subject attitudes regarding the relative effectiveness of various leadership styles, work group effectiveness in solving problems and making decisions, subject perception of work group effectiveness, changes in cohesiveness of work groups, changes in subject satisfaction with work group participation, and changes in leadership style of the formal leader of work groups.

The following measures of dependent variables were used in the study.

1. A measure of the subject's knowledge of motivation and leadership theory and of the 3-D leadership model presented by Hersey


21 Ibid.
and Blanchard. A concept test developed by Hersey and Blanchard was used.\textsuperscript{22}

2. A measure of the subject's attitudes regarding the relative effectiveness of various leadership styles. The Ideal Leader Behavior Questionnaire was used.\textsuperscript{23}

3. Objective measures of the effectiveness of group decision making. The results of simulation company operations were used. These include accumulated gross profit, gain in stock price, and average percentage of forecasting error.

4. A measure of the subject's perception of his simulation company's work group effectiveness. The group drive and group productivity sub-scales of the Work Group Description Questionnaire were used.\textsuperscript{24}

5. A measure of work group cohesiveness. The Group Cohesiveness sub-scale of the Work Group Description Questionnaire was used.\textsuperscript{25}

6. A measure of the subject's satisfaction with participation in his work group. The Job Satisfaction scale was used.\textsuperscript{26}

\textsuperscript{22}Paul Hersey and Kenneth Blanchard, Ohio University, Athens, Ohio, 1969. A copy of this test is included in Appendix Three.

\textsuperscript{23}Bureau of Business Research, The Ohio State University, Columbus, Ohio, 1957. A copy of the instrument is included in Appendix Three.

\textsuperscript{24}Ralph M. Stogdill, Bureau of Business Research, The Ohio State University, Columbus, Ohio, 1965. A copy of this instrument is included in Appendix Three.

\textsuperscript{25}Ralph M. Stogdill, Bureau of Business Research, The Ohio State University, Columbus, Ohio, 1965. A copy of this instrument is included in Appendix Three.

\textsuperscript{26}Ralph M. Stogdill, Bureau of Business Research, The Ohio State
7. A measure of leadership style of formal work group leaders. The Leader Behavior Description Questionnaire was used.\(^{27}\)

The subjects for the study were 75 senior and graduate students enrolled in business policy classes at Ohio University during the Spring Quarter, 1970. After the second class meeting, the subjects were randomly assigned to fifteen General Business Management Simulation teams or work groups. Because of previous commitments which made it impossible for them to participate in the two-day laboratory training session, nine of the subjects had to be reassigned from experimental groups to control groups.

One subject from each group was randomly selected and appointed President of the simulation company. He was given total responsibility for work accomplishment and goal attainment for his group. The game coordinator held him responsible for correct completion of necessary forms, for prompt return of the forms, and for the dissemination of necessary information to his group members. In addition, the coordinator communicated to the group only through the President, he answered only his questions, communicated procedures to the group through him, and asked him any pertinent question regarding group operation. Of course general instructions on the mechanics of the simulation were given to the assembled groups in normal classroom periods. The

University, Columbus, Ohio, 1965. A copy of this instrument is included in Appendix Three.

\(^{27}\) Bureau of Business Research, The Ohio State University, Columbus, Ohio, 1957. A copy of this instrument is included in Appendix Three.
appointment of a President and the structuring of responsibility and communication was designed to build hierarchy into the groups and provide a higher degree of realism in the experimental task.

Subjects were informed that they would participate in the General Business Management Simulation for four simulated years, sixteen decisions, during the quarter. Two decisions would be made each week during the last part of each class meeting. The simulation companies were also expected to meet outside class periods and perform any necessary analysis and planning they deemed necessary. They were told that they would all participate in a training laboratory in collaborative task effort during the course of the quarter (also a normal part of the course), some during the early part of the quarter, others at the end. They were told that they would be expected periodically to complete questionnaires relating to their participation to facilitate ongoing research in the college.

Before the initial decision, subjects were informed that their course grade was partially dependent on the operating effectiveness of their simulation company. Each company would be graded on the basis of its total accumulated gross profit, the companies earning the highest gross profit receiving the highest grade, and that the team grade would be counted as 25% of each subject's final grade. This was done to develop higher involvement and more realism in the experimental task.

All groups participated in the General Business Management Simulation for one simulated year, four decisions, before the experimental treatment was employed. This provided them with six to eight
hours of intense participation together. During this time it was expected that the groups would start forming and develop some structure, norms, and standards of operation. Past experience with the General Business Management Simulation indicated that the groups would start to perform with some degree of effectiveness after one simulation year. Observation of the groups in this study showed that most groups had started to differentiate for task accomplishment and develop norms of integration for the resolution of internal conflicts at this time. Thus, while the groups may not have had the history and strength of norms of most ongoing work groups, they had developed sufficiently to be considered work groups and support generalization of conclusions from this study to regular ongoing work groups.

At the end of the first simulation year, the companies were broken into three groups, two experimental and one control. The three groups of five teams each were matched on the basis of accumulated gross profit during the first year of play. Table One give accumulated gross profit of each team at that point, and the average accumulated gross profit for experimental groups and control group. The differences were not statistically significant. Experimental group one was selected to participate in Laboratory Training in Collaborative Task Effort as intact work groups. Experimental group two was selected to participate in the training as fragment work groups. The Control groups did not participate in the training during the experimental


### TABLE 1

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group 1</th>
<th>Experimental Group 2</th>
<th>Experimental Group 3</th>
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<tr>
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<td>$89,000</td>
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<td>Team 2</td>
<td>26,100</td>
<td>75,600</td>
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<td>Team 3</td>
<td>38,000</td>
<td>82,000</td>
<td>1,500</td>
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<tr>
<td>Team 4</td>
<td>81,000</td>
<td>52,200</td>
<td>83,700</td>
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<tr>
<td>Team 5</td>
<td>94,600</td>
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<td>Average</td>
<td>72,000</td>
<td>76,060</td>
<td>73,400</td>
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</table>

Immediately preceding the laboratory, all subjects, experimental and control, completed the Job Satisfaction Scale, the Work Group Description Questionnaire, and the Leader Behavior Description Questionnaire. The concept test and the Ideal Leader Behavior Questionnaire were administered immediately following the laboratory since they were being used to measure fade-out of laboratory impact on knowledge and attitudes.

The Training Laboratory was held Saturday, April 11 and Sunday, April 12, 1970 in the facilities of Litton Industries Business Equipment Division Training Center in Athens, Ohio. The Laboratory was conducted by E. T. Hellebrandt and Paul Hersey, both of Ohio University. The author was an observer in the laboratory. Both trainers subjectively evaluated the laboratory as exceeding their expectations and past experience in conducting laboratory training sessions with students. Their subjective evaluation is at least partially supported.

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30 Paul Hersey and E. T. Hellebrandt, personal conversation, April 12, 1970.
by an analysis of responses to the concept test and Ideal Behavior Questionnaire. An after-only analysis comparing the experimental subjects with the control subjects showed that the experimental subjects scored significantly higher on the concept test than did the control subjects (median test, \( p < .01 \)) and that a significantly greater number of them rated initiating structure behavior higher than consideration behavior than did the controls (chi square test, \( p < .001 \)). These results are consistent with the objectives of the laboratory and support the position that the training did have an immediate impact on the participants.

After the Training Laboratory, Simulation Companies completed two and one-half more years of simulated play. Although they were scheduled to complete three years, the disturbances on the Ohio University Campus and the subsequent closing of the school necessitated stopping play at the end of three and one-half years. At the end of play, all subjects completed the job satisfaction scale, the Work Group Description Questionnaire, the Leader Behavior Description Questionnaire, the concept test, and the Ideal Leader Behavior Questionnaire. Graduate students remained on campus after the school closing and were able to complete the questionnaires in class. Questionnaires were mailed to undergraduates and were returned by all but three of the undergraduate subjects, all from different simulation companies. Archive data on the operating results of the simulation were collected at the end of the quarter from the master files of the simulation coordinator.
The research model given in Table 2 summarizes the research methodology.

**TABLE 2**

<table>
<thead>
<tr>
<th></th>
<th>EXPERIMENTAL GROUP 1</th>
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<tr>
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<td>GBMS Year 1</td>
<td>GBMS Year 1</td>
<td>GBMS Year 1</td>
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<td>Pre-test</td>
<td>WGD, JS, LBDQ</td>
<td>WGD, JS LBDQ</td>
<td>WGD, JS LBDQ</td>
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<td>Treatment</td>
<td>Training Laboratory</td>
<td>Training Laboratory</td>
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<tr>
<td></td>
<td>Intact Groups</td>
<td>Fragmented Groups</td>
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<td>Pre-test</td>
<td>CT, ILB</td>
<td>CT, ILB</td>
<td>CT, ILB</td>
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<tr>
<td>Task</td>
<td>GBMS Years 2-3½</td>
<td>GBMS Years 2-3½</td>
<td>GBMS Years 2-3½</td>
</tr>
<tr>
<td>Post-test</td>
<td>WGD, JS LBDQ, CT, ILB OR</td>
<td>WGD, JS LBDQ, CT, ILB OR</td>
<td>WGD, JS LBDQ, CT, ILB OR</td>
</tr>
</tbody>
</table>

WGD - Work group description questionnaire  
JS - Job satisfaction scale  
LBDQ - Leader Behavior Description Questionnaire  
CT - Concept test  
ILB - Ideal Leader Behavior Questionnaire  
OR - Operating results of simulation company operations  
GBMS - General Business Management Simulation

**Null Hypotheses**

In this section each hypothesis will be stated in null form, the measure used to test the hypothesis will be stated, and the conditions
for rejecting the null hypothesis will be stated. The statistics used
for hypothesis testing for each hypothesis will be the Mann-Whitney
U.\textsuperscript{31} The data obtained by the measures are considered to be ordinal
in nature and thus the use of a non-parametric statistic is advisable.
The chosen significance level for tolerance of alpha error will be
.111, although lower significance levels will be indicated when they
are present.

Null Hypothesis 1

Ho: There is no statistically significant difference in the
rate of fade-out of the effects of laboratory training in collaborative
task effort for subjects who participate in the training as intact
groups and those who participated as fragmented groups.

This hypothesis was tested using data from the concept test and
the Ideal Leader Behavior Questionnaire.

The null is rejected if:

A, there is a statistically significant greater decrease in
score on the concept test, administration one to administration two,
for subjects who participated in the training as fragmented groups than
for subjects who participated in the training as intact groups.

\[(FG) \text{CT1} - \text{CT2} \geq (IG) \text{CT1} - \text{CT2}\]

B, there is a statistically significant greater change in the
ideal leader behavior style, Ideal Leader Behavior Questionnaire,

\textsuperscript{31}Sidney Siegel, Nonparametric Statistics for the Behavioral
administration one to administration two, for subjects who participate in the training as fragmented groups than for subjects who participate in the training as intact groups.

\[(\text{FG}) \ ILB1 \ - \ ILB2 \ > \ (\text{IG}) \ ILB1 \ - \ ILB2\]

**Null Hypothesis 2**

Ho: There is no statistically significant difference in work group effectiveness in making unprogrammed decisions between work groups that participate in laboratory training in collaborative task effort as an intact group and those that participate in the training as a fragmented group.

\[(\text{IG}) \ AP \ > \ (\text{FG}) \ AP\]
\[(\text{IG}) \ SP \ > \ (\text{FG}) \ SP\]
\[(\text{IG}) \ FE \ < \ (\text{FG}) \ FE\]

**Null Hypothesis 3**

Ho: There is no statistically significant difference in perceived increase in work group effectiveness between members of work groups who participate in laboratory training in collaborative task effort as an intact group and those that participate in the training as fragmented groups.

This hypothesis was tested using data from the work group description questionnaire.

The null is rejected if:

A, there is a statistically significant greater increase in the scores on the subscales group productivity and group drive, adminis-
tration one to administration two, for simulation company management
teams who participate in the training as an intact group than for
those that participated in the training as a fragmented group.

\[(IG)\ GP2\ -\ GP1\ \succeq\ (FG)\ GP2\ -\ GP1\]
\[(IG)\ GD2\ -\ GD1\ \succeq\ (FG)\ GD2\ -\ GD1\]

Null Hypothesis 4

No: There is no statistically significant difference in the
increase in cohesiveness of work groups that participate in laboratory
training in collaborative task effort as an intact group and those that
participate in the training as a fragmented group.

This hypothesis was tested using data from the work group des-
scription questionnaire.

The null is rejected if:

A, there is a statistically significant greater increase in
score on the sub-scale group cohesiveness, administration one to admin-
istration two, for simulation company management teams that participate
in the training as intact group than for those that participate in the
training as fragmented groups.

\[(IG)\ GC2\ -\ GC1\ \succeq\ (FG)\ GC2\ -\ GC1\]

Null Hypothesis 5

No: There is no statistically significant difference in member
increase in satisfaction with participation with their work group be-
tween members of work groups that participate in laboratory training
in collaborative task effort as an intact group and those that partic-
ipate in the training as a fragmented group.
This hypothesis was tested using data from the Job Satisfaction Scale.

The null is rejected if:

A, there is a statistically significant greater increase in score on the job satisfaction scale, administration one to administration two, for simulation company management teams that participate in the training as an intact group than for those that participate in the training as a fragmented group.

\[(IG) \text{JS2} - \text{JS1} > (FG) \text{JS2} - \text{JS1}\]

**Null Hypothesis 6**

**H0:** There is no statistically significant difference in the increase in initiating structure behavior and consideration behavior between formal leaders of work groups that participate in laboratory training in collaborative task effort as an intact group and formal leaders of work groups that participate in the training as fragmented groups.

This hypothesis was tested using data from the Leader Behavior Description Questionnaire.

The null is rejected if:

A, there is a statistically significant greater increase in the scores on initiating structure and consideration, administration one to administration two, received by presidents of simulation company management teams who participate in the training as an intact group than for presidents of teams that participate in the training as a fragmented group.
\((IG) IS2 - IS1 \geq (FG) IS2 - IS1\)

\((IG) Con2 - Con1 \geq (FG) Con2 - Con1\)
CHAPTER IV

RESEARCH FINDINGS

Introduction

The findings of the experimental study will be displayed and discussed in this chapter. First, correlations between all variables will be presented and significant correlations discussed. Then each hypothesis will be presented in turn, the null hypothesis will be rejected or not rejected, the data used to test the hypothesis will be presented, and implications of the data will be discussed. Finally, the significant findings of the study will be summarized.

The Correlation Matrix

Table 3 displays Spearman Rank Order Correlations between all variables for all groups in the study, both experimental and control. Several of these correlations are significant to the implications of the study.

The strong positive relationship between accumulated gross profit and increase in stock prices is expected. Gross profit is one major factor which influences stock price.

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<th>SP</th>
<th>FE</th>
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<th>COH</th>
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<th>SAT</th>
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* Spearman Rho significant, p=.10  
** Spearman Rho significant, p=.05
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<td>GP</td>
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<td>SP</td>
<td>Increase in Stock Price - GBMS - years 2-3½</td>
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<td>FE</td>
<td>Average Forecasting Error - GBMS - years 2-3½</td>
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<td>Con (LBDQ)</td>
<td>Increase in Consideration - Leader Behavior Description Questionnaire</td>
<td></td>
</tr>
<tr>
<td>Coh</td>
<td>Increase in Work Group Cohesiveness - Work Group Description Questionnaire</td>
<td></td>
</tr>
<tr>
<td>Prod</td>
<td>Increase in Work Group Productivity - Work Group Description Questionnaire</td>
<td></td>
</tr>
<tr>
<td>Drive</td>
<td>Increase in Work Group Drive - Work Group Description Questionnaire</td>
<td></td>
</tr>
<tr>
<td>Sat</td>
<td>Increase in Satisfaction - Job Satisfaction Questionnaire</td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>Knowledge of Motivation and Leadership Theory, The Concept Test</td>
<td></td>
</tr>
<tr>
<td>IS (ILBQ)</td>
<td>Increase in Initiating Structure - Ideal Leader Behavior Questionnaire</td>
<td></td>
</tr>
<tr>
<td>Con (ILBQ)</td>
<td>Increase in Consideration - Ideal Leader Behavior Questionnaire</td>
<td></td>
</tr>
</tbody>
</table>
There is a strong positive relationship between both accumulated
gross profit and increase in stock price and increase in initiating
structure behavior and consideration behavior by formal leaders of
work groups. The simulation companies who did well in the simulation
tended to have presidents who increased the strength of their leader-
ship. Of course, no casualty can be assumed.

The relationship of increase in group member satisfaction with
several of the other variables is of interest. There is a strong
positive relationship between satisfaction and the measures of work
group effectiveness, accumulated gross profit and increase in stock
price. There is a strong positive relationship between increase in
satisfaction and increase in leader consideration behavior. Contrary
to some popular human relations literature, there is also a strong
positive relationship between satisfaction and increase in leader
initiating structure behavior and there is a negative relationship,
although not significant, between satisfaction and increase in group
cohesiveness. These data seem to indicate that satisfaction is more
related to task accomplishment and behavior directed toward task accom-
plishment and behavior directed toward task accomplishment than to
social interaction.

There are significant negative relationships between increase
in preference for consideration behavior by formal leaders and in-
creases in perception of group productivity and drive and group co-
hesiveness. Members of groups that saw themselves as becoming more
effective, decreased their preference for consideration behavior by
formal leaders. Likewise, members of groups that saw themselves as
becoming more cohesive decreased their preference for consideration behavior. The latter is somewhat surprising, since it is normally assumed that consideration behavior by leaders enhances group cohesiveness.

There are positive relationships between group drive, group cohesiveness, and perceived group productivity. The relationships between drive and cohesiveness and between drive and perceived productivity are significant. The relationship between cohesiveness and perceived productivity is not significant. This tends to confirm the model proposed in Chapter Two. The relationship between cohesiveness and measures of work group effectiveness are somewhat confirming to the model, however. There are non-significant negative relationships between cohesiveness and gross profit and increase in stock price.

Finally, two expected relationships were not significant. It was expected that perceptions of increases in work group effectiveness, group productivity and group drive, would be positively related to objective measure of group effectiveness, accumulated gross profit and increase in stock price. While positive relationships were indicated, these relationships were not statistically significant. Increase in group drive was significantly positively related to increased consideration behavior by formal leaders, increased group cohesiveness, and increased perception of group productivity. Perception of increased group productivity, in addition to group drive, is positively related only to increased consideration behavior of formal group leaders. Both group productivity and group drive were strongly related to decrease in preference for consideration behavior by formal leaders.
Hypothesis 1

Ho: There is no statistically significant difference in the rate of fade-out of laboratory training in collaborative task effort for subjects who participate in the training as intact groups and those that participate in the training as fragment groups. H1: There is a greater fade-out of the effects of the training for those who participate in the training as fragmented groups than for those who participate as intact groups.

The Null Hypothesis is not rejected.

TABLE 4

INCREASE IN SCORES ON THE CONCEPT TEST

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th></th>
<th>FRAGMENTED GROUPS</th>
<th></th>
<th>CONTROL GROUPS</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>score rank</td>
<td>score rank</td>
<td>score rank</td>
<td></td>
<td>score rank</td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>-1.0 1</td>
<td>4.75 1</td>
<td>- .33 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>.2 5</td>
<td>1.2 3</td>
<td>-.83 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td>-1.33 12</td>
<td>-2.2 14</td>
<td>.80 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 4</td>
<td>-.33 7.5</td>
<td>-3.0 15</td>
<td>-1.17 11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 5</td>
<td>-2.17 13</td>
<td>2.8 2</td>
<td>0 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Score</td>
<td>-.915</td>
<td>.710</td>
<td>-.307</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data in Tables 4, 5, and 6 were used as measures of the fade-out of the effects of the training laboratory. It was expected that, because of the mutual experience they had in the laboratory and the mutual support they can provide each other after the laboratory members of intact groups would experience less fade-out of effects than members of fragmented groups.
### Table 5

**Increase in Preference for Initiating Structure Behavior**

<table>
<thead>
<tr>
<th></th>
<th><strong>Intact Groups</strong></th>
<th></th>
<th><strong>Fragmented Groups</strong></th>
<th></th>
<th><strong>Control Groups</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Score</strong></td>
<td><strong>Rank</strong></td>
<td><strong>Score</strong></td>
<td><strong>Rank</strong></td>
<td><strong>Score</strong></td>
</tr>
<tr>
<td>Group 1</td>
<td>-3.00</td>
<td>14</td>
<td>-3.50</td>
<td>15</td>
<td>3.33</td>
</tr>
<tr>
<td>Group 2</td>
<td>1.0</td>
<td>7</td>
<td>-1.50</td>
<td>12</td>
<td>2.57</td>
</tr>
<tr>
<td>Group 3</td>
<td>-0.67</td>
<td>10</td>
<td>8.20</td>
<td>1</td>
<td>5.20</td>
</tr>
<tr>
<td>Group 4</td>
<td>1.67</td>
<td>6</td>
<td>0.25</td>
<td>9</td>
<td>-2.67</td>
</tr>
<tr>
<td>Group 5</td>
<td>-0.83</td>
<td>11</td>
<td>0.80</td>
<td>8</td>
<td>4.20</td>
</tr>
<tr>
<td>Average</td>
<td>-0.367</td>
<td></td>
<td>0.850</td>
<td></td>
<td>2.55</td>
</tr>
</tbody>
</table>

### Table 6

**Increase in Preference for Consideration Behavior**

<table>
<thead>
<tr>
<th></th>
<th><strong>Intact Groups</strong></th>
<th></th>
<th><strong>Fragmented Groups</strong></th>
<th></th>
<th><strong>Control Groups</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Score</strong></td>
<td><strong>Rank</strong></td>
<td><strong>Score</strong></td>
<td><strong>Rank</strong></td>
<td><strong>Score</strong></td>
</tr>
<tr>
<td>Group 1</td>
<td>1.50</td>
<td>6</td>
<td>-2.75</td>
<td>13.5</td>
<td>2.50</td>
</tr>
<tr>
<td>Group 2</td>
<td>-2.75</td>
<td>13.5</td>
<td>-2.00</td>
<td>11</td>
<td>-0.67</td>
</tr>
<tr>
<td>Group 3</td>
<td>-5.00</td>
<td>15</td>
<td>3.40</td>
<td>1</td>
<td>2.00</td>
</tr>
<tr>
<td>Group 4</td>
<td>0.33</td>
<td>9</td>
<td>1.75</td>
<td>4</td>
<td>-2.17</td>
</tr>
<tr>
<td>Group 5</td>
<td>0.50</td>
<td>8</td>
<td>0.60</td>
<td>7</td>
<td>1.60</td>
</tr>
<tr>
<td>Average</td>
<td>-1.08</td>
<td></td>
<td>0.200</td>
<td></td>
<td>0.653</td>
</tr>
</tbody>
</table>

The data in Table 4 indicate that there is no significant difference in the rate of fade-out of knowledge of motivation and leadership theory between the members of intact groups and members of fragmented groups. Two factors should be considered in analyzing the data.
It is quite possible that the elapsed time between the end of the training laboratory and the post test (approximately seven weeks) was not sufficient for fade-out effects to develop and the variations in the data are due to chance alone. The subjects were students and they may be conditioned to minimize the extinction of learning, at least for the time period of an academic quarter.

If fade-out effects have started, the direction of the data indicates that fade-out of knowledge may be progressing more rapidly in intact groups than in fragmented groups. It is possible that fragmented groups, once they were reformed into their normal simulation teams, attempted to draw on the theory presented in the laboratory to assist them in reforming the groups. This would have made the theory visible for a greater period of time and enhanced the conceptual learning of the laboratory.

While it is probable that the variation in data are due to chance only, the direction of the variation is somewhat disconfirming to the proposition that training in intact work groups encourages consistent change, provides reference group support on the job, and minimizes fade-out of training effects.

The data presented in Tables 5 and 6 are also somewhat disconfirming. It was expected that, because of the training laboratory concentration on task accomplishment and the use of the 3-D model of leadership, the experimental subjects would increase more in preference for initiating structure behavior and remain about the same or increase only slightly in preference for consideration behavior. This expectation seems to have been met (see Chapter III). The data show that,
after the laboratory, subjects that participated in intact groups decreased somewhat in preference for both initiating structure behavior and consideration behavior, subjects from fragmented groups stayed about the same or increased slightly, and subjects from control groups increased considerably, particularly in preference for initiating structure behavior. The difference between control groups and intact groups is significant in both preference for initiating structure behavior (U=4, p=.048; Mann-Whitney U, One tailed test) and preference for consideration behavior (U=6, p=.111; Mann-Whitney U, One tailed test). The difference between the intact groups and the fragmented groups, was not statistically significant. But, once again, there is a directional indication that the effects of laboratory training may be fading out more rapidly in intact groups than in fragmented groups.

Hypothesis 2

Ho: There is no statistically significant difference in work group effectiveness in making unprogrammed decisions between work groups that participate in laboratory training in collaborative task effort as an intact group and those that participate in the training as fragmented groups. H1: Work groups who participate in the training as intact groups will be more effective in decision making than

2 The considerable increase in preference for initiating structure behavior in control groups is of tangential interest. It is an interesting hypothesis, and one currently being tested, that students, who normally score higher on preference for consideration behavior than preference for initiating structure behavior, increase in the understanding of the need for structure in task oriented groups through participation in a dynamic decision making simulation such as the General Business Management Simulation.
those that participate in the training as fragmented groups.

The null hypothesis is not rejected.

### TABLE 7

ACCUMULATED GROSS PROFIT, GENERAL BUSINESS MANAGEMENT SIMULATION, YEARS 2-3 1/2

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th></th>
<th>FRAGMENTED GROUPS</th>
<th></th>
<th>CONTROL GROUPS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>profit rank</td>
<td></td>
<td>profit rank</td>
<td></td>
<td>profit rank</td>
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</tr>
<tr>
<td>Group 1</td>
<td>35,900</td>
<td>14</td>
<td>403,900</td>
<td>6</td>
<td>106,800</td>
<td>11</td>
</tr>
<tr>
<td>Group 2</td>
<td>309,000</td>
<td>8</td>
<td>234,000</td>
<td>9</td>
<td>208,800</td>
<td>10</td>
</tr>
<tr>
<td>Group 3</td>
<td>74,000</td>
<td>12</td>
<td>696,500</td>
<td>3</td>
<td>444,800</td>
<td>5</td>
</tr>
<tr>
<td>Group 4</td>
<td>467,800</td>
<td>4</td>
<td>943,300</td>
<td>2</td>
<td>1,074,900</td>
<td>1</td>
</tr>
<tr>
<td>Group 5</td>
<td>-46,500</td>
<td>13</td>
<td>-50,800</td>
<td>15</td>
<td>385,100</td>
<td>7</td>
</tr>
<tr>
<td>Average</td>
<td>186,600</td>
<td></td>
<td>445,380</td>
<td></td>
<td>444,080</td>
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</tr>
</tbody>
</table>

### TABLE 8

INCREASE IN STOCK PRICE, GENERAL BUSINESS MANAGEMENT SIMULATION, YEARS 2-3 1/2

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th></th>
<th>FRAGMENTED GROUPS</th>
<th></th>
<th>CONTROL GROUPS</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>price rank</td>
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<td>price rank</td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>- 3/8</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>- 1/2</td>
<td>12</td>
</tr>
<tr>
<td>Group 2</td>
<td>1 1/8</td>
<td>8</td>
<td>- 1/4</td>
<td>10</td>
<td>1/4</td>
<td>9</td>
</tr>
<tr>
<td>Group 3</td>
<td>-2 3/8</td>
<td>15</td>
<td>6 1/2</td>
<td>5</td>
<td>11 7/8</td>
<td>3</td>
</tr>
<tr>
<td>Group 4</td>
<td>4 1/8</td>
<td>6</td>
<td>20 5/8</td>
<td>2</td>
<td>32 3/8</td>
<td>1</td>
</tr>
<tr>
<td>Group 5</td>
<td>-1 1/2</td>
<td>14</td>
<td>-1 3/8</td>
<td>13</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>
TABLE 9

AVERAGE FORECASTING ERROR, GENERAL BUSINESS
MANAGEMENT SIMULATION, YEAR 2-3½

<table>
<thead>
<tr>
<th>INTACT GROUPS</th>
<th>FRAGMENTED GROUPS</th>
<th>CONTROL GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>error</td>
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<td>error</td>
</tr>
<tr>
<td>Group 1</td>
<td>7.4 8</td>
<td>9.9 11</td>
</tr>
<tr>
<td>Group 2</td>
<td>6.0 5</td>
<td>11.6 13</td>
</tr>
<tr>
<td>Group 3</td>
<td>13.9 14</td>
<td>8.6 10</td>
</tr>
<tr>
<td>Group 4</td>
<td>8.5 9</td>
<td>6.5 6</td>
</tr>
<tr>
<td>Group 5</td>
<td>6.9 7</td>
<td>5.2 3.5</td>
</tr>
</tbody>
</table>

The data in Tables 7, 8, and 9 are measures of work group effectiveness. Of these, two, accumulated gross profit and increase in stock price, provide consistent findings of considerable interest. The third, average forecasting error, provides no consistent findings. The variation in average forecasting error is of a random nature. This, and the lack of any significant relationship with any other variable in Table 3, indicates that average forecasting error is not a valid measure of work group effectiveness in this study.

There is strong indication from the data that the impact of the training laboratory was counter to the hypothesized impact. It was expected that intact groups would perform more effectively than fragmented groups. Rather, fragmented groups accumulated more profit than did intact groups, with the difference approaching significance (U=8, p=.210; Mann-Whitney U., One tailed test). There was no significant difference in profit accumulation between fragmented and control groups. The measure of work group effectiveness obtained from increase in
stock price shows that fragmented groups performed significantly more effectively than did intact groups \((U=6, p=.111; \text{Mann-Whitney U}, \text{ One tailed test}).\) Further, control groups increased more in stock price than did intact groups \((U=5, p=.075; \text{Mann-Whitney U}, \text{ One tailed test}).\) Once again there was no significant difference between fragmented groups and control groups.

The data thus cast considerable doubt on the popular proposition that participation in a training laboratory as an intact work group contributes more to work group effectiveness than does fragmenting the groups and allowing individual group members to participate in training with relative strangers.

**Hypothesis 3**

\(H_0: \) There is no statistically significant difference in perceived increase in work group effectiveness between members of work groups who participate in laboratory training in collaborative task effort as an intact group and those that participate in the training as fragmented groups. \(H_1: \) Members of groups that participate in the training as an intact group will perceive their work group effectiveness to increase more than members of groups that participate in the training as fragmented groups.

The null hypothesis is rejected on one measure.

It was expected that, because of the concentration on effective group processes in the training laboratory, intact groups would adopt some of these processes and perceive themselves to be more effective. It was expected that fragmented groups would have more difficulty
adopting these processes in the reformation of their groups because of variations in patterns established in the various D-groups in the training.

**TABLE 10**

MEMBER PERCEPTION OF INCREASES IN GROUP PRODUCTIVITY

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th></th>
<th>FRAGMENTED GROUPS</th>
<th></th>
<th>CONTROL GROUPS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>productivity</td>
<td>rank</td>
<td>productivity</td>
<td>rank</td>
<td>productivity</td>
<td>rank</td>
</tr>
<tr>
<td>Group 1</td>
<td>-2.25</td>
<td>12</td>
<td>1.75</td>
<td>3</td>
<td>.20</td>
<td>8</td>
</tr>
<tr>
<td>Group 2</td>
<td>3.25</td>
<td>1</td>
<td>-2.00</td>
<td>13</td>
<td>.33</td>
<td>7</td>
</tr>
<tr>
<td>Group 3</td>
<td>1.00</td>
<td>5.5</td>
<td>-1.50</td>
<td>12</td>
<td>-1.40</td>
<td>11</td>
</tr>
<tr>
<td>Group 4</td>
<td>1.00</td>
<td>5.5</td>
<td>1.20</td>
<td>4</td>
<td>2.83</td>
<td>2</td>
</tr>
<tr>
<td>Group 5</td>
<td>-1.17</td>
<td>10</td>
<td>-3.00</td>
<td>15</td>
<td>- .83</td>
<td>9</td>
</tr>
<tr>
<td>Average</td>
<td>.366</td>
<td></td>
<td>-.71</td>
<td></td>
<td>.226</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 11**

MEMBER PERCEPTION OF INCREASES IN GROUP DRIVE

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUP</th>
<th></th>
<th>FRAGMENTED GROUP</th>
<th></th>
<th>CONTROL GROUP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>drive</td>
<td>rank</td>
<td>drive</td>
<td>rank</td>
<td>drive</td>
<td>rank</td>
</tr>
<tr>
<td>Group 1</td>
<td>-2.00</td>
<td>11.5</td>
<td>-1.50</td>
<td>7.5</td>
<td>-1.80</td>
<td>10</td>
</tr>
<tr>
<td>Group 2</td>
<td>-.25</td>
<td>5</td>
<td>-3.25</td>
<td>15</td>
<td>-1.60</td>
<td>7.5</td>
</tr>
<tr>
<td>Group 3</td>
<td>1.67</td>
<td>1</td>
<td>-2.25</td>
<td>14</td>
<td>-2.20</td>
<td>13</td>
</tr>
<tr>
<td>Group 4</td>
<td>0</td>
<td>3.5</td>
<td>0</td>
<td>3.5</td>
<td>.50</td>
<td>2</td>
</tr>
<tr>
<td>Group 5</td>
<td>.67</td>
<td>6</td>
<td>-2.00</td>
<td>11.5</td>
<td>-1.67</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>-.252</td>
<td></td>
<td>-1.80</td>
<td></td>
<td>-1.333</td>
<td></td>
</tr>
</tbody>
</table>
The data in Tables 10 and 11 lend some, but not complete, support to these expectations. In each case, the direction is that predicted, but the results are not statistically significant in all cases. Intact groups stayed about the same in group drive, decreasing slightly. Fragmented groups decreased considerably in group drive. The difference between the intact groups and the fragmented groups is statistically significant ($U=5$, $p=.075$; Mann-Whitney U, One tailed test). The difference in increase in group drive between intact groups and control groups approaches significance ($U=7$, $p=.155$; Mann-Whitney U, One tailed test). There is no significant difference between fragmented groups and control groups.

Using perception of group productivity as a measure of perception of work group effectiveness, the results are in the predicted direction, but they are not statistically significant.

Thus, we can accept the proposition that work groups that participate in laboratory training as an intact group will perceive their work group effectiveness to be greater than members of work groups that participate in the training as individual but with some reservations.

**Hypothesis 4**

$H_0$: There is no statistically significant difference in the increase in cohesiveness of work groups that participate in laboratory training in collaborative task effort as intact groups and those that participate in the training as fragmented groups. $H_1$: Groups who participate in the training as intact groups will increase more in
cohesiveness than those who participate in the training as fragmented groups.

The null hypothesis is rejected.

\textbf{TABLE 12}
\begin{center}
\textbf{INCREASE IN GROUP COHESIVENESS}
\end{center}

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th>FRAGMENTED GROUPS</th>
<th>CONTROL GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cohesiveness</td>
<td>rank</td>
<td>cohesiveness</td>
</tr>
<tr>
<td>Group 1</td>
<td>-.25</td>
<td>6</td>
<td>-2.5</td>
</tr>
<tr>
<td>Group 2</td>
<td>0</td>
<td>4</td>
<td>.50</td>
</tr>
<tr>
<td>Group 3</td>
<td>2.33</td>
<td>1</td>
<td>-1.75</td>
</tr>
<tr>
<td>Group 4</td>
<td>.17</td>
<td>3</td>
<td>-.20</td>
</tr>
<tr>
<td>Group 5</td>
<td>-.50</td>
<td>7</td>
<td>-3.00</td>
</tr>
<tr>
<td>Average</td>
<td>.349</td>
<td></td>
<td>-1.39</td>
</tr>
</tbody>
</table>

It was expected that participation in the training laboratory as an intact group would enable group members to develop stronger interpersonal relationships with each other, develop more liking for each other, and increase group cohesiveness. Fragmented group members, on the other hand, would not have this opportunity. While they would perhaps develop more understanding of desirable interpersonal relationships, they would have to attempt to develop these relationships after they returned to their normal work groups.

This expectation was strongly supported. Intact groups stayed about the same, or increased slightly, in group cohesiveness. Fragmented groups decreased considerable. The difference between intact groups and fragmented groups is statistically significant ($U=6$, $p=.111$;
Mann-Whitney U, One tailed test). The difference in increase in group cohesiveness between intact groups and control groups is statistically significant (U=0, p=.004; Mann-Whitney U, One tailed test). There is no statistically significant difference between fragmented groups and control groups. Thus, the data support the proposition that participation in laboratory training as intact groups contributes more to group cohesiveness than does participation as fragmented groups.

**Hypothesis 5**

Ho: There is no statistically significant difference in member increase in satisfaction with participation with their work group between members of work groups that participate in laboratory training in collaborative task effort as intact groups and those that participate in the training as fragmented groups. H1: Members of groups that participate in the training as intact groups will receive greater satisfaction from their normal participation with their work groups than do members of groups that participate in the training as fragmented groups.

The null hypothesis is not rejected.

The data in Table 13 were used as a measure of increased member satisfaction with participation with his work group. It was expected that along with perceptions of increased work group effectiveness and group cohesiveness, members of intact groups would receive greater satisfaction from regular work group participation.

This expectation was not supported. Control groups decreased some in satisfaction and both intact groups and fragmented groups decreased considerably more. While the differences between both experi-
mental groups and the control groups are strong, they are not statistically significant. As was indicated in Table 3, satisfaction seems to be more strongly related to actual operating results and increased leadership strength than to perceived effectiveness and cohesiveness. While this explanation is consistent with the results for intact and control groups, it is not completely consistent with the results for fragmented groups. One could conjecture that an additional factor effecting the satisfaction of members of fragmented groups was the dissonance produced as a result of being exposed to the training and group functioning in the laboratory and the conflict, and modes of conflict resolution used, in their simulation company work groups.

TABLE 13

INCREASE IN SATISFACTION

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th></th>
<th>FRAGMENTED GROUPS</th>
<th></th>
<th>CONTROL GROUPS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>satisfaction</td>
<td>rank</td>
<td>satisfaction</td>
<td>rank</td>
<td>satisfaction</td>
<td>rank</td>
</tr>
<tr>
<td>Group 1</td>
<td>-3.50</td>
<td>10</td>
<td>2.5</td>
<td>2.5</td>
<td>-4.00</td>
<td>11.5</td>
</tr>
<tr>
<td>Group 2</td>
<td>-1.25</td>
<td>7</td>
<td>-4.5</td>
<td>13</td>
<td>-3.17</td>
<td>8</td>
</tr>
<tr>
<td>Group 3</td>
<td>-7.00</td>
<td>15</td>
<td>-.75</td>
<td>4</td>
<td>-3.20</td>
<td>9</td>
</tr>
<tr>
<td>Group 4</td>
<td>-1.17</td>
<td>5.5</td>
<td>-4.00</td>
<td>11.5</td>
<td>2.50</td>
<td>2.5</td>
</tr>
<tr>
<td>Group 5</td>
<td>-1.17</td>
<td>5.5</td>
<td>-5.4</td>
<td>14</td>
<td>3.00</td>
<td>1</td>
</tr>
<tr>
<td>Average</td>
<td>-2.82</td>
<td>-2.43</td>
<td>-</td>
<td>-</td>
<td>-.970</td>
<td>-</td>
</tr>
</tbody>
</table>

**Hypothesis 6**

Hypothesis: There is no statistically significant difference in the increase in initiating structure behavior and consideration behavior between formal leaders of work groups that participate in laboratory
training in collaborative task effort as an intact group and formal
leaders of work groups that participate in the training as fragmented
groups. H1: Leaders of work groups that participate in the training
as intact groups will increase more in both initiating structure be-
behavior and consideration behavior than will leaders of work groups
that participate in the training as fragmented groups.

The null hypothesis is not rejected.

TABLE 14

INCREASE IN INITIATING STRUCTURE BEHAVIOR BY FORMAL LEADERS

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th>FRAUGHTED GROUPS</th>
<th>CONTROL GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IS</td>
<td>rank</td>
<td>IS</td>
</tr>
<tr>
<td>Group 1</td>
<td>-3.67</td>
<td>10</td>
<td>-5.3</td>
</tr>
<tr>
<td>Group 2</td>
<td>-9.00</td>
<td>13</td>
<td>-14.00</td>
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<td>Group 3</td>
<td>-15.50</td>
<td>15</td>
<td>2.67</td>
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<tr>
<td>Group 4</td>
<td>4.25</td>
<td>2</td>
<td>2.00</td>
</tr>
<tr>
<td>Group 5</td>
<td>-2.50</td>
<td>9</td>
<td>-4.50</td>
</tr>
<tr>
<td>Average</td>
<td>-5.304</td>
<td>-3.826</td>
<td>3.17</td>
</tr>
</tbody>
</table>

The data in Tables 14 and 15 are measures of the increase in
initiating structure behavior and consideration behavior by formal
leaders of simulation company management teams after the training
laboratory. It was expected that participation in the laboratory would
encourage formal group leaders to increase initiating structure be-
behavior particularly, and also consideration behavior. Further, it was
expected that participation with his intact group would enable the
leader to develop strong leadership patterns which would be easily
transferred to normal work group operation. While leaders of fragmented groups might develop strong leadership patterns, it was expected that they would have some difficulty incorporating these patterns into their reformed groups.

TABLE 15
INCREASE IN CONSIDERATION BEHAVIOR BY FORMAL LEADERS

<table>
<thead>
<tr>
<th></th>
<th>INTACT GROUPS</th>
<th>FRAGMENTED GROUPS</th>
<th>CONTROL GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Con rank</td>
<td>Con rank</td>
<td>Con rank</td>
</tr>
<tr>
<td>Group 1</td>
<td>-5.67 14</td>
<td>-2.60 8</td>
<td>-2.20 6</td>
</tr>
<tr>
<td>Group 2</td>
<td>-4.33 11</td>
<td>-7.30 15</td>
<td>-4.40 12</td>
</tr>
<tr>
<td>Group 3</td>
<td>-3.50 10</td>
<td>-2.33 7</td>
<td>-2.75 9</td>
</tr>
<tr>
<td>Group 4</td>
<td>-1.75 4</td>
<td>1.25 3</td>
<td>2.00 2</td>
</tr>
<tr>
<td>Group 5</td>
<td>-1.80 5</td>
<td>-4.50 13</td>
<td>2.80 1</td>
</tr>
<tr>
<td>Average</td>
<td>-3.41</td>
<td>-3.096</td>
<td>-.91</td>
</tr>
</tbody>
</table>

These expectations were not met. Control group formal leaders increased in initiating structure behavior after the laboratory while both intact and fragmented group leaders decreased considerably. The difference between the intact groups and the control groups is significant ($U=4$, $p=.048$; Mann-Whitney U, One tailed test) and the difference between fragmented and control groups is significant ($U=6$, $p=.111$; Mann-Whitney U, One tailed test). The difference between intact groups and fragmented groups is not significant. The leaders of control groups decreased some in consideration behavior and the leaders of both intact and fragmented groups decreased considerably more. The difference between experimental groups and the control groups is not
statistically significant, but it is strong in direction (intact groups; \( U=8, p=.210 \); fragmented groups, \( U=7, p=.155 \); Mann-Whitney U, One tailed test).

Thus, the data indicate that participation in the training laboratory had exactly the opposite of the desired effect on the formal leaders. Rather than encouraging them to develop and use strong leadership patterns, they tended to move away from leadership functions. It is possible that concentration on work group activities and work group processes encouraged the leaders to become more group oriented and abdicate their leadership responsibilities.

**Summary**

The significant findings of this study are summarized below.

1. There is a positive relationship between measures of group effectiveness and increase in formal leader initiating structure behavior and consideration behavior and increased member satisfaction with participation in the work group.

2. There is a positive relationship between group drive, group cohesiveness and perceived group productivity. But, there is a slight negative relationship between cohesiveness and work group effectiveness measures.

3. There is no indication that participation in the training laboratory as an intact group decreases fade-out of the effects of the laboratory. Rather, there is a non-significant indication that fade-out occurs more rapidly in intact groups than in fragmented groups.

4. Work groups that participate in the training laboratory as
an intact group perform at a significantly lower level of effectiveness in formal work group operations than do either fragmented groups whose members participate in the training with relative strangers or control groups that did not participate in the training.

5. There is a strong indication that work groups that participate in the training laboratory as an intact group perceive their work group effectiveness to increase more than do fragmented group whose members participate as individual.

6. Work groups that participate in the training laboratory as an intact group increase significantly more in group cohesiveness than do fragmented groups.

7. Formal leaders who participate in the training laboratory with either their intact group or with individuals from other groups tend to decrease their leadership behavior, both initiating structure behavior and consideration behavior. They tend to abdicate their leadership responsibilities.
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The use of laboratory training as a management education technique has become increasingly prevalent in the last decade. It has been used to help individuals become more aware of their own behavior and its impact on others, to become more sensitive to the reactions of others, to increase their ability to interact with others in a more open and authentic manner, and to increase their ability to function more effectively with others. It has been incorporated as one of the major techniques used to help work groups and organizations function more effectively.

Research on the effectiveness of laboratory training has not fully confirmed its value as an educational technique. Much of the research conducted has methodological limitations. But, there is valid research that does indicate that laboratory training can provoke individual changes in knowledge, attitudes, skills, and behavior on the job.

When laboratory training is considered in the context of organizational change, however, the traditional practice of sending an executive off-site to a laboratory training session with participants from other organizations has come under question. Much of the popular
literature proposes that this practice is less effective than that of training each individual with his intact work group. It has been suggested that (because of the common experience and the mutual support that work group members can provide each other after they return to the job environment) any impact the laboratory might have on the individuals will fade out less rapidly. During the laboratory training session, the group can examine the way it functions, its standards of operation, and develop new and more effective group process norms which can be transferred directly to ongoing work group functioning.

While this proposition has received popular support, there has been no direct test of its validity. The purpose of this study was to provide a direct test of the proposition.

The major research question of the study was: Do work groups that participate in laboratory training as an intact work group perform more effectively after the training than those that are fragmented and whose members participate with individuals who are not members of their regular work group?

The question was answered by the testing of the following hypotheses:

Hypothesis 1. There is a greater fade-out of the effects of laboratory training if work group members participate as a fragmented group than if they participate in the training as an intact group.

Hypothesis 2. Work groups that participate in laboratory training as an intact group are more effective in making unprogrammed decisions than those that participate in the training as a fragmented group.
Hypothesis 3. Members of work groups who participate in laboratory training as an intact group perceive a greater increase in their work group effectiveness than do members of work groups who participate in the training as a fragmented group.

Hypothesis 4. Work groups that participate in laboratory training as an intact group increase more in cohesiveness than those that participate in the training as a fragmented group.

Hypothesis 5. Members of work groups who participate in laboratory training as an intact work group increase more in satisfaction from normal participation with their work group than do members of work groups who participate in the training as a fragmented group.

Hypothesis 6. Formal leaders of work groups that participate in laboratory training as an intact group increase more in both initiating structure and consideration behavior than do formal leaders of work groups that participate in the training as a fragmented group.

The hypotheses were tested in a laboratory experiment. The research design was a randomized pretest-post test design with two experimental treatments. The subjects for the research were seniors and graduate students enrolled in business policy classes at Ohio University. The experimental task was the General Business Management Simulation. The students played this simulation as a normal part of their course work. The experimental treatments were participation in Laboratory Training in Collaborative Task Effort as intact work groups and participation in the training as fragmented groups.

The independent variable in the study was the composition of D-groups in Laboratory Training in Collaborative Task Effort; whether
the subjects participated in the training as intact groups or as fragmented groups. The dependent variables were changes in subject knowledge of motivation and leadership theory, changes in subject attitudes regarding the relative effectiveness of various leadership styles, work group effectiveness in making decisions, subject perception of work group effectiveness, changes in cohesiveness of work groups, changes in subject satisfaction with work group participation, and changes in leadership styles of formal leaders.

The measure of dependent variables were the Concept Test, the Ideal Leader Behavior Questionnaire, Accumulated gross profit of the simulation company teams, changes in stock price for the simulation companies, average forecasting error for the simulation companies, the Work Group Description Questionnaire subscales on group productivity, group drive, and group cohesiveness, The Job Satisfaction Scale, and the Leader Behavior Description Questionnaire.

At the beginning of the Spring Quarter, 1970, the subjects were randomly assigned to fifteen General Business Management Simulation Company teams, the work groups for the study. One subject from each team was randomly selected to be the President of the company, the formal leader of the work group.

All work groups participated in the simulation for one simulated year, four quarterly decisions, before the experimental treatments were employed. At the end of the simulation year the companies were divided into three groups of five companies each, two experimental and one control. The groups were matched on the basis of accumulated gross profit during the first year. One experimental group was selected to
participate in laboratory training in collaborative task effort as intact work groups. The second participated in the training as fragmented work groups. The control group did not participate in the training.

The training laboratory was held Saturday and Sunday, April 11 and 12, 1970. It was conducted by Paul Hersey and E. T. Hellebrandt. An evaluation of the training laboratory indicated that it had a significant immediate impact on the participants. After the laboratory, simulation companies completed two and one half additional years of simulation play.

Pretests were completed at the time of the training laboratory. Post test were completed at the completion of the simulation exercise.

Data relating to each of the hypotheses were analyzed separately, using the Mann-Whitney U as a test of significance. In addition, Spearman Rank Order Correlations between each of the variables were calculated.

Hypothesis One regarding the differential rate of fade-out was not supported. Hypothesis Two regarding work group effectiveness was not supported. Hypothesis Three regarding perceived work group effectiveness was supported on one measure. Hypothesis Four regarding cohesiveness was supported. Hypothesis Five regarding member satisfaction was not supported. Hypothesis Six regarding formal leader leadership style was not supported.

The significant findings from the study were:

1. There was a positive relationship between measures of group effectiveness and increase in formal leader initiating structure
behavior and consideration behavior and increased member satisfaction with participation in the work group.

2. There was a positive relationship between group drive, group cohesiveness, and perceived group productivity. But, there was a slight negative relationship between cohesiveness and work group effectiveness measure.

3. There was no indication that participation in the training laboratory as an intact group decreases fade-out of the effects of the laboratory. Rather, there was a non-significant indication that fade-out occurs more rapidly in intact groups than in fragmented groups.

4. Work groups that participated in the training laboratory as an intact group performed at a significantly lower level of effectiveness in normal work group operations than did either the fragmented groups or the control groups.

5. There was a strong indication that work groups that participated in the training laboratory as an intact group perceived their work group effectiveness to increase more than did fragmented groups.

6. Work groups that participated in the training laboratory as an intact group increased significantly more in group cohesiveness than did fragmented groups.

7. Formal leaders who participated in the training laboratory with either their intact group or with individuals from other groups tended to decrease their leader behavior, both initiating structure behavior and consideration behavior.
Conclusions

Several of the findings of this research, summarized in the previous section, should be disquieting to the proponents of laboratory training. The findings raise considerable question about the utility of intact group participation in laboratory training, what is popularly called family group training. And, the research findings even question the utility of laboratory training in general.

The findings indicate that those groups that participated in the Training Laboratory in Collaborative Task Effort as an intact group performed at a significantly lower level of effectiveness than did the fragmented groups. This finding is consistent with the results of the Deep, Bass, and Vaughan study, and thus, the validity of the finding is strengthened.¹ The significant question becomes "why?" What is it about the composition of the D-groups or the laboratory training in general that causes intact groups to be less effective?

Contrary to the model presented in Chapter II, no positive relationship was found between cohesiveness and actual productivity. This supports Stogdill's original proposition and is consistent with much of the research in the area.² Stogdill notes that the findings are reasonable.³ If group members devote their efforts to maintaining


³ Ibid.
a cohesive work group, they have less time and effort to devote to productive activities and interactions. It is reasonable to assume that the subjects had only a limited amount of time to devote to the General Business Management Simulation. And, as they devoted more time to nontask performances and nontask related interactions to maintain and strengthen group cohesiveness, they had less time to devote to task performances and task related interactions.

In addition, the findings show that the intact groups increased significantly more in cohesiveness than did the fragmented groups. In contrast the fragmented groups increased more in conflict (cohesiveness is an inverse measure of conflict). One can speculate that the laboratory D-groups did develop standards of operation and norms of behavior during the laboratory, and that members of D-groups developed satisfying interpersonal relationships with one another and desired to maintain group structure. (Two examples support this speculation. All members of two D-groups went to a local tavern after the Saturday evening session. They sat at separate tables rather than at one large table. Their discussion was primarily at the social level with only limited reference to the laboratory. Sunday, at the conclusion of the laboratory session, three subjects from fragmented groups indicated in informal conversation that they would like to continue their participation in the simulation with their laboratory D-group rather than with their original simulation company team).

Consistent with the model presented in Chapter II, it is probable that the intact groups were able to transfer these norms back to their ongoing work group activities. Their member's expectations of
reference group support was increased and their performances in observance of group norms were directed toward maintaining the established interpersonal relationships and group structure. Members of fragmented groups did not have the strong expectation of reference group support. And, the patterns of acceptable behavior they developed in the laboratory could not be directly transferred to their work group activities because of variations in the norms established by their various D-groups. Thus, as the fragmented groups reformed into their simulation groups conflict developed. This analysis indicates that transfer of the effects of laboratory training was facilitated by participation as an intact group.

But, what were the effects of the training? Returning to the model in Chapter II, it was proposed that participation in the training would increase expectations regarding task performances, contributions to be made, and task urgency, and perhaps increase task performances and task related interactions. Rather, it appears that participation in the laboratory training, even with its strong task orientation, increased expectations regarding nontask performances, nontask related interactions, and mutual reciprocated interactions. These effects contributed to increased interpersonal and structure, and ultimately to increased cohesiveness and drive. But, they lead to a reduction in operations and productivity. And, as indicated above, the effects had more impact on the normal work group operation of intact groups than that of fragmented groups.

The model proposed in Chapter II proposed that the training laboratory would increase cohesiveness, and that it would also increase
productivity. It proposed that strong formal leadership, leadership high in both initiating structure and behavior and consideration behavior, would create a motivational climate that would sustain both high cohesiveness and high productivity. And, it was proposed that participating in a task oriented training laboratory would encourage formal leader increase in both initiating structure and consideration.

The findings of the study did show a positive relationship between formal leader increase in both initiating structure and consideration and objective measures of work group effectiveness. No significant relationship was found between cohesiveness and leader behavior. Thus, while the proposition is only partially confirmed, there is evidence that strong formal leadership is related to high productivity.

But, the second part of the proposition is not confirmed. Participation in the training laboratory did not lead to increased strength of formal leadership. Rather, formal leaders of both intact groups and fragmented groups decreased significantly in initiating structure behavior while the formal leaders of control groups increased in initiating structure behavior, and experimental formal leaders decreased more in consideration than did control group formal leaders.

Throughout the training laboratory, there was considerable emphasis on developing consensus in decision making. Compromise or one-man decisions were discouraged. Rather, D-groups were encouraged to assure that all points of view were heard and thoroughly discussed, that all members contributed to the decisions as much as possible, and that groups come to consensus on their decisions. It is probable that
this concentration on consensus encourages formal leaders to reduce the strength of their leadership. Rather than provide structure and direct group activities, formal leaders are encouraged to abdicate leadership responsibilities and allow the group to function as a unit with little differentiation of activities and no clear structure of control over member performances. In essence, formal leaders tend to move toward Laissez-faire type leadership.

Thus, in intact groups there was a decrease in strength of formal leadership, an increase in cohesiveness, and a lower level of productivity. Perhaps this is a satisfying social environment, but it certainly is not an effective work group.

In fragmented groups, there was a decrease in strength of leadership, an increase in conflict, and a higher level of productivity. Perhaps this provides a somewhat less satisfying social environment. But, with less nontask performances and interactions necessary, more time and effort are available to direct toward task accomplishment. And, with higher levels of conflict, member-to-member monitoring of activities provides some of the necessary control functions abdicated by the decrease in formal leadership.

This analysis of the research findings points up several important implications for practitioners and users of laboratory training.

Participation in laboratory training, even task oriented laboratory training, has a positive impact on nontask performances, interactions, and expectations, and a negative impact on task performances, interactions, and expectations. Thus, it is appropriate to use laboratory training to cure social ills, but it should not be used with
the expectation that it will contribute to productivity.

Laboratory training in intact groups, or family laboratories, will increase the cohesiveness of the work group, but it is dysfunctional to work group productivity. One should not conclude that family laboratories are not valuable to organizations. For, as Stogdill and others have proposed, cohesiveness is important and of concern to the practicing manager. Low levels of cohesiveness are associated with high rates of absenteeism and turnover, strikes, and general employee discontent. Thus, if these are present, participation in laboratory training as intact work groups may be of value to the organization; it may be useful to make some sacrifice in work group productivity to reduce the costs associated with employee discontent.

Laboratory training in fragmented groups, or stranger laboratories, increases conflict within the work group, and is not necessarily functional or dysfunctional to group productivity. From an organizational point of view, the use of laboratory training with fragmented groups is of limited value. Any benefits accrue primarily to the individual in his social contacts.

Laboratory training, particularly any laboratory stressing group decision making, is not an effective leadership training technique. It encourages formal leaders to reduce the strength of their leadership and depend on group processes for direction and control of group activities. The feedback component of laboratory training would be of value.

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4 Ralph M. Stogdill, Managers, Employees, Organizations, Columbus, Ohio; The Ohio State University, Bureau of Business Research, Monograph No. 125, 1965.
in leadership training, but only if the leaders were functioning as a leader. Thus, laboratory training would have to be restructured and group decision making consistent with that used in normal group operations (a move which might reduce some other desirable results of the training), if it were to be used to increase strength of leadership. Or, more traditional leadership training techniques such as role playing should be used.

It is strongly recommended that this study be replicated in a field setting using natural work groups. The use of student subjects, because of their lack of actual work experience and, perhaps, attitudes different from those of the experienced businessman, is a limitation of the study. While the difficulty of measuring actual productivity is recognized, findings consistent with the remaining findings of this study would strongly support the validity of its conclusions. In particular such a study should confirm or reject the conclusions that task oriented laboratory training has a positive impact on nontask variables and a negative impact on task variables, that laboratory training in intact work groups contributes more to cohesiveness than fragmented group training, and that laboratory training is dysfunctional to the development of strong leaders.
APPENDIX I

THE GENERAL BUSINESS MANAGEMENT SIMULATION

Characteristics of the General Business Management Simulation

The simulated business environment of the GENERAL BUSINESS MANAGEMENT SIMULATION is of necessity an abstract one. The decision variables included are generalized, and the simulated environment is not intended to replicate that of any specific real world concern or industry. The relationships between decisions and their results, as determined by the simulation model, only reflect general business and economic principles. That is, an increase in prices by a given firm will tend to reduce its share of the overall industry market and also tend to reduce to a degree the overall industry market itself. Conversely increased market promotion through increased sales effort of advertising will tend to have the opposite effect. This is assuming that all other factors remain the same, that is, that other firms do not make decisions reinforcing or offsetting those made by the given firm.

However, THE GENERAL BUSINESS MANAGEMENT SIMULATION has been designed that the decisions it requires of participants possess many of the same fundamental characteristics as those faced by real world

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1This Material is reprinted from, E. T. Hellebrandt and John E. Stinson, General Business Management Simulation, Athens, Ohio: Follett, 1965. Chapters 2 and 3. With permission of the authors.
managers. The simulated firm manager, like his real world counterpart, is concerned with making a number of interdependent decisions in a dynamic environment, in which uncertainty exists and in which no set solutions to his problems that will give an optimum or "best" result are known. Each exercise is unique in that the decisions of the competing firms and their interaction with each other, create the basic problems within the structure of the simulation model.

Few decisions in the GENERAL BUSINESS MANAGEMENT SIMULATION can be made effectively in any period without evaluating their impact on all other decisions being considered for the period, and their possible effect on competitor's decisions. A decision to lower price will require serious consideration of the proper expenditure that should be made, in light of the new price, for advertising and selling. Should an increase in manufacturing costs be offset by an increase in price with its probable reduction in sales volume, by increased sales efforts to increase sales volume and with it production volume, thus lowering unit costs, or, by increased methods engineering activity to reduce processing costs.

Each period's decisions are influenced by what has happened earlier in the simulation exercise. Thus, THE GENERAL BUSINESS MANAGEMENT SIMULATION'S simulated firm's manager must learn to live with his previous decisions, whether they were good or bad, wise or unwise. Planning, thus, is very important, for the consequences of a present decision may be felt long into the future. Necessary time lags, such as the time required to expand plant capacity, or the time involved in implementing a decision to increase invested capital thru a stock issue,
further point up the need for careful planning to assure sound decisions.

THE GENERAL BUSINESS MANAGEMENT SIMULATION is an interacting model in which as many as twenty or more simulated firms may be competing in a market. Inherent in every decision made by the manager of a given company, will be the uncertainty of what other companies are planning to do, and how they will react to the decision that has been made. Will competitors meet one company's decision to lower its price by defensively reducing their own prices, or by increasing their advertising and selling expenditures to maintain their desired sales volume in face of the price cut. Will a counter offer to the union in labor negotiations be too low to be acceptable to the union and result in a strike, or too high raising manufacturing costs above those for the rest of the industry. Either alternative may be costly, yet a decision must be made. It will thus be necessary for the manager of the simulated company to learn to predict through experience and by using various management techniques and concepts, the range of probable alternative effects of a decision and to learn to use judgment in selecting the best course of action under the existing circumstances.

The application of a number of quantitative analytical tools can be helpful in arriving at decisions in THE GENERAL BUSINESS MANAGEMENT SIMULATION. However, the simulation model itself, while inherently not complex, is sufficiently dynamic that no direct analytical solutions to it are known. That is, no single set of equations, other mathematical procedures, or basic policies are available which, if followed, will always enable the simulated company's manager to arrive
at an optimum or "best" answer to the overall management of the firm. Rather he must learn to decide which of the many concepts and management tools available to him can be useful in any given decision situation. Further, since the model is inherently dynamic, courses of action and decisions which may be very successful at one stage in a simulation exercise, or, in fact, may have been successful in a previous exercise, will not necessarily be equally successful again. Thus, the simulation provides the participants with experience not only in making decisions per se, but also in determining the conditions under which the utilization of different approaches may be appropriate.

As indicated earlier, THE GENERAL BUSINESS MANAGEMENT SIMULATION environment is an abstract one, not intended to replicate any specific real world situation. For this reason, participants would not base their decisions on assumptions drawn from their knowledge of any specific firm with which they may be familiar. They should attempt to analyze and understand the basic assumptions and parameters of the simulation model as given in Chapter 3, and learn how the variables tend to behave through an analysis of the data provided from the simulation itself.

Conversely, participants are cautioned not to assume that upon completion of their GENERAL BUSINESS MANAGEMENT SIMULATION managerial experience, they can take any of the specific decision strategies which have proven successful in a specific exercise and apply them to real world business situations. Nor in fact, as noted earlier can they be applied to another simulation exercise based on this or another simulation model.
As has been pointed out "...business games are designed to teach the student to be a better problem solver and not to provide him with a set of predetermined rules and relationships which he can carry over into his business activity."  

Player's Instructions

In this GENERAL BUSINESS MANAGEMENT SIMULATION you will take over as manager of one of several competing companies. The background of the business environment in which you will operate is one in which several teams, each representing a separate firm, compete in the same market. All firms manufacture the same new consumer expendable product which is the result of a technological innovation of an existing consumer product. All companies will start with the same conditions in respect to assets, cash, inventories, plant capacity, etc. The company history given in Chapter 4, will give additional information accounting for the company's current condition.

All companies are unionized, their employees being represented by the United Assembly Workers (AFL-CIO). The current labor agreements with all companies in the industry provides for a union shop and expire at the end of the second (2) quarter of the third (3) year.

As in the real world of business, there are no absolute goals by which "winners" or "losers" are measured. Participation in the simulation itself will help you to think through and determine more specifically the goals of your firm. Share of market, total sales, total

---

assets, return on sales and investment, dividends paid, can all be measures of the relative success or failure of a firm. There may be other measures which are more pertinent in your particular situation. During the critique session which concludes each simulation exercise, each team will be given an opportunity to explain and evaluate its performance by whatever criteria it chooses to use.

You may organize your company in any manner you choose. You may, for example, wish to select officers with specific decision making functions (President, Sales Manager, Production Manager, etc.) or, you may choose to organize as an "executive committee". As noted earlier, many recent studies have suggested alternative methods of organization which your team may want to explore.  

3

The Market

The market for the simulation model has a long-term growth trend. However, periodically depressed economic conditions may occur. Since the market is moderately seasonal, the market potential, or forecast of anticipated sales, will show a seasonal slump. As in real world business operations, the actual market is a function of pricing policies, expenditures for advertising and promotion, and the research and development policies of the competing firms in the industry. In other words, industry wide activity with regard to pricing and expenditures will determine whether or not total sales for all companies exceeds or does not exceed the anticipated market potential. The market potential during the first period of the first year will be sufficient to absorb,

3 See references in bibliography
Decisions To Be Made By Teams

There are four periods (quarters) in each year of the simulation exercise. Each company will make a number of decisions each period to keep the firm operating in its competitive environment. Some decisions must be made each period, others, as indicated, are permissive. Decisions are:

A. PRICE

B. QUANTITY OF PRODUCT TO BE MANUFACTURED DURING THE PERIOD AT NORMAL OPERATIONS

C. QUANTITY OF PRODUCT TO BE MANUFACTURED DURING THE PERIOD AT OVERTIME OPERATIONS, if any

D. ADVERTISING AND SELLING EXPENDITURES

E. METHODS ENGINEERING EXPENDITURES, if any

F. RESEARCH AND DEVELOPMENT EXPENDITURES, if any

G. MARKET RESEARCH INFORMATION EXPENDITURES, if any

H. PLANT EXPANSION, if any

I. LIQUIDATION OF EXCESS PLANT CAPACITY, if any

J. SHORT TERM INVESTMENT OF SURPLUS FUNDS, if any

K. BANK BORROWING, if any

L. DIVIDEND PAYMENTS, if any

M. LONG TERM DEBT BORROWING, if any

N. COMMON STOCK ISSUE, if any

Your expenditures in any given period may not exceed your available cash plus short term investment balance at the beginning of the period, except that within limits, indicated later, you may borrow from the bank on a short term basis.
Price

The price of the product is under your control except for the constraints placed on the range of price variation per quarter. You may raise or lower price in any multiples of 5c up to and including a maximum of 25c per quarter. You will be informed each period on your BALANCE SHEET form the prices charged by each of your competitors during the last period.

Quantity Of Product To Be Produced

Production. You may produce any quantity of product in units of 100 at your prevailing variable cost per unit, up to the capacity of your plant. You may, however, produce in excess of plant capacity on an overtime basis, by a full 5000 units at an added total cost of $30,000, or a full 10,000 units at an added total cost of $65,000.

Fixed Manufacturing Costs. Your fixed manufacturing costs for the plant capacity you maintain will be entered on your DECISION form each period by the Umpire.

Variable Costs. Your variable costs per unit of product will be entered on your DECISION form each period by the Umpire. Note that when producing at overtime, production must be in blocks of 5000 or 10,000 units. The added variable cost for overtime operations are included in the total added costs for such operations.

Inventory. You may not sell a larger number of units than the total of your beginning inventory of finished goods plus your current production. If your actual sales in a given period are less than your total finished goods inventory available for sale, the excess units will
be carried over as unsold finished goods inventory into the next period. An inventory carrying charge of 4% of the manufacturing cost value of the unsold inventory, per quarter, will be charged as an expense. This carrying charge will cover all expenses incurred to maintain inventory; storage costs, insurance, investment costs, obsolescence, etc. This expense will be entered on the DECISION form by the Umpire each quarter. The cost of goods sold will be the difference between the cost value of the finished goods inventory available for sale and the cost value of the unsold inventory.

Methods Engineering Expenditures

Methods Engineering, with its objective of cost reduction through the improvement of manufacturing processes, is one method used by many companies to keep manufacturing costs competitive, or to gain a competitive advantage. Expenditures to operate a Methods Engineering program tend to decrease variable manufacturing costs. You may allocate any amount you choose, in increments of $1000 for this purpose. It is assumed there is a direct, though not necessarily proportional, relation between the amounts expended for methods engineering and the resulting cost reductions. When the cost reduction effect of these programs equal two cents (2¢) per unit, your variable cost will be reduced thereafter by two cents (2¢) per unit.

Advertising and Selling Expenditures

You may allocate any amount you choose to advertising and selling each period in increments of $1000. These expenditures are to cover all costs of marketing your product, except the cost of distribution and
carrying factory inventory, which are charged separately. Advertising and selling expenditures in this model are assumed to cover sales costs, advertising, sales promotion costs, etc. Obviously, if little or no funds are expended for advertising and selling during a given quarter, some sales will yet occur since the effect of past sales efforts will continue for a short period. However, a continued low level of expenditures will have an increasingly adverse effect on sales.

Research and Development Expenditures

Research and development activities are important in the operations of many companies, as an organized program for the improvement of existing products and the development of new products. One way in which a company can obtain a larger share of a given market is to offer its customers an improved product.

Expenditures for research and development may be made in any amounts in multiples of $1000 with a minimum expenditure in any quarter in which Research and Development Programs are being carried on, of $5000. These expenditures will be accumulated as long as R & D expenditures are continued, or, until a product improvement has been obtained, at which time the total accumulation is considered expended and thus cancelled. In the real world of business, product improvements result from many chance factors as well as from the level and character of planned R & D activity. The determination of when a company has obtained a product improvement includes these chance factors. A product improvement has the effect of increasing the saleability of your product in the market for a given price and sales effort.
The impact of your improved product on your sales will decrease as your competitors gain their own product improvements in competition. After you have received a product improvement, you may continue to invest in R & D to obtain additional product improvements since they are additive in their effect and, other things being equal, will increase the saleability of your product. The Umpires will notify you each quarter the names of all companies who have received product improvements that quarter.

**Market Research Information**

You may purchase certain information about the market, your competitors progress and how they allocate their funds. The market research information you may purchase and its cost are:

1. **The total estimated market potential for the next period** $1000
2. **Your % share of the actual market for the current period** 2000
3. **Your competitors total sales in units for the period** 1000
4. **Each competitor's sales in units for the period** 5000
5. **Total Industry advertising and selling expenditures for period** 2000
6. **Total Industry R & D expenditures for last four periods** 1000
7. **Your potential sales for the period** 3000

(This information tells you how much you could have sold in the period had you had sufficient inventory of finished goods available for sale to fully meet the demand you generated for your product)
Specific allocations of funds for market research information are to be made in the appropriate spaces on the SUPPLEMENTARY INFORMATION form and the total expenditure entered in the appropriate space on the DECISION form. If you do not wish to buy a particular type of information, leave that space blank. Any market information that you purchase will be supplied by the Umpires on the SUPPLEMENTARY INFORMATION form (except for item 4 which is given on the BALANCE SHEET form) with your next DECISION form.

**Plant Expansion**

Plant capacity may be increased by any multiples of 2500 units at a capital cost of $20 per unit ($50,000). The rate of increase cannot be greater than 10% of present plant capacity from one quarter to the next. Expenditures will be incurred in the current quarter, that is, the period in which the decision to increase plant capacity is made. Plant investment results in a capital asset and is thus reflected in the quarterly BALANCE SHEET form. The new capacity will not be available for production until two (2) quarters later, i.e., moneys expended in the first quarter will not give increased production capacity until the third quarter. Fixed manufacturing costs tend to increase or decrease as plant capacity increases or decreases at a rate approximating $10,000 per each 10,000 units change in capacity, and variable costs tend to increase or decrease as plant capacity decreases or increases at a rate approximately 10¢ per unit for each 10,000 units change in capacity. The effect of the increased or decreased plant capacity on fixed manufacturing and variable costs will take effect in the quarter the changed capacity becomes available for production.
Liquidation of Excess Capacity

The decision to liquidate capacity may be made in any quarter by any multiples of 2500 units at two thirds (2/3) of the original cost of each unit of capacity so liquidated. The number of units that may be liquidated in any quarter may not exceed 20% of plant capacity. The funds resulting from a liquidation of plant will be available for use at the beginning of the following quarter.

Short Term Investment of Surplus Funds

Surplus funds may be invested in short term investments in any multiples of $10,000 at an earned interest of 1% per quarter. Funds invested in short term investments are considered to be invested for one quarter only and become available as cash at the beginning of the next quarter. If you desire to continue to invest in short term investments, you must so indicate each quarter on your DECISION form.

Bank Borrowing

Funds may be borrowed for one year for any purpose from the bank in multiples of $100,000 at a discounted rate of interest of 8% per year, with an overall line of bank credit of $500,000 at any one time. Since bank loans are discounted loans, for each $100,000 you borrow from the bank you will receive in the quarter in which the loan is made $92,000. You should insert this amount in the space provided on the DECISION form. At the end of a year, the repayment of the full $100,000 (or multiples thereof) due the bank will be noted by the Umpires on your DECISION form. In the determination of your net income for the quarter in which a loan is received, the $8000 per $100,000
discount is considered as an expense. Space is provided on the INCOME form for this expense.

**Depreciation**

The depreciation is computed at a fixed rate of 1\(\frac{1}{2}\)% of the current plant and equipment value per quarter. For new capacity, depreciation begins the quarter the new facilities become available for production. It is assumed that the depreciation expense, as a charge against current operations, will be immediately reinvested in the plant thus neither reducing nor increasing plant capacity.

**Taxes**

Income tax liabilities are accrued on the basis of 50% of the Net Profit Before Taxes each quarter and are accumulated in an accrued income tax reserve. All other taxes are included in General and Administrative Expenses. Income taxes will be payable annually in the second quarter of the following year and will be computed at a 50% rate on the **annual** Net Profit Before Taxes. If there is a net loss at the end of the year, no taxes will be due. Any excess funds in the income tax reserve fund will be transferred to cash at the beginning of the second quarter. Losses may be carried forward as an offset against profits for a maximum of one year.

**Dividends**

A company may declare a quarterly dividend in units of 1¢ per share in any quarter, payable from earned surplus. A company's dividend policy will affect its stock price. Consistency, as well as the
amount of the dividends, will be a factor in the determination of the stock price.

**New Stock Issue**

Each quarter the Umpires will determine the market price of each company's stock. This information will be provided on the quarterly BALANCE SHEET form. The determination of the market price of the stock will take into consideration a company's earnings, both as to amount and consistency, its earning potential, and its dividend policy.

To increase its available capital, a company may issue new no-par stock in blocks of 5000 shares. Any new stock issue will be considered to have been offered for sale and sold by an underwriting syndicate at a price 1/8 point below the current market price. When a company decides to issue new stock, it will indicate the number of shares it wishes to offer for sale on the SUPPLEMENTARY INFORMATION form. Funds from a new stock issue will be available for use in the quarter following that in which a company makes its decision to issue the new stock.

**Long Term Debt**

To provide additional funds for working capital and/or plant expansion, a company may borrow in multiples of $100,000 on long term debt financing for a period of ten (10) years at an interest rate of 6% per year payable quarterly. When a company decides it wishes to borrow through long term debt financing, it will so indicate on the SUPPLEMENTARY INFORMATION form in the space provided. The funds borrowed will be available for use in the following quarter. Long
term debt may not be prepaid prior to maturity.

**Distribution Expenses**

The distribution expense covers those items of expense resulting from the process of getting the finished goods from the factory to the customer. Transportation, insurance, field warehousing, and obsolescence are examples of the kinds of activities covered by these expenditures. Since these expenses are closely related to sales, the expense of $1.00 per unit sold will be charged each quarter against that quarters sales.

**General and Administrative Expense**

General and Administrative expenses include all non-manufacturing costs which are not directly charged separately as expenses. These include administrative salaries, office expenses, general sales administration, etc. They total $90,000 per quarter, and it will be assumed that they will not change within the period covered by the simulation exercise.

**Inventory Shortage**

A penalty for failing to meet orders (demand) that a company creates in the market through its allocation of funds, has been included in the simulation model. Operating policies which result in an oversold condition (a share of the market in excess of finished goods available for sale) are evidence of inefficient use of resources and unsound decisions, and result in disappointed customers. This penalty will be determined by the Umpires, and its effect will be felt in the periods
following that in which customers could not be supplied with promised goods. The effect of the penalty will continue for one or more periods. You will not be notified by the Umpire of the incidence of, or the amount of, this penalty, although through a proper analysis of the "feedback of information" available to you, you may readily determine if a penalty has been imposed. As in real life, selling to a disappointed customer in the future is dependent on the restoration of "good will."

**Annual Report**

At the end of the first quarter of each year, an ANNUAL REPORT is published by the Umpires covering the preceding year. This report is distributed to all companies without charge and includes the following information for each company.

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>LIABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>Short Term Bank Loans</td>
</tr>
<tr>
<td>Inventory</td>
<td>Long Term Debt</td>
</tr>
<tr>
<td>Short Term Investments</td>
<td>Common Stock Outstanding</td>
</tr>
<tr>
<td>Plant Investment</td>
<td>Earned Surplus</td>
</tr>
<tr>
<td>Total Assets</td>
<td>Total Liabilities</td>
</tr>
<tr>
<td>Total Annual Sales ($)</td>
<td>Net Profit (after taxes)</td>
</tr>
</tbody>
</table>

**Critique Session**

The climax of a simulation exercise is a critique session at the conclusion of simulation "play". Each team in the exercise presents an explanation of its operations and answers questions raised by its competitors. The Umpires, through the use of master charts and other
records, will present an analysis of the play and lead a general discussion of the simulation experience. The organization of the critique session, the extent of the reports to be prepared by each team and the nature of the general discussion will depend on the type of simulation exercise.
APPENDIX II

LABORATORY TRAINING IN COLLABORATIVE TASK EFFORT

Seminar Schedule

Saturday - April 11th

8:30   General Session - Introduction
9:00   Work Group Activity - Organization Behavior
10:15  General Session - Individual and Group Scoring
       - Lecturette - Work Group Effectiveness
10:45  Work Group Activity - Evaluation of Work Group Effectiveness - Organization Behavior Test
12:00  Lunch
1:00   General Session - Film "Patterns"
2:15   Individual Activity - Analysis of "Patterns"
2:30   General Session - Lecture - Leadership & Effectiveness
3:30   Work Group Activity - Analysis of "Patterns"
4:45   General Session - Individual and Group Scoring - "Patterns"
5:00   Work Group Activity - Evaluation of Work Group Effectiveness - "Patterns"
6:00   Dinner
7:30   General Session - Lecturette - The Effective Organization
7:45   Work Group Activity - Minicopeter, Inc.

Sunday, April 12th

8:30   Work Group Activity - Evaluation of Work Group Effectiveness - Minicopeter, Inc.
9:30   General Session - paired, Minicopeter, Inc.
General Session - Lecturette - Intergroup Conflict
Pair member feedback on Minicopter, Inc.

10:45

11:45  Lunch

12:30  General Session - Lecturette - Non-evaluative Personal Feedback

1:00   Work Group Activity - Non-evaluative Personal Feedback

3:30   General Session - Wrap Up

Organization Behavior Test

management of Organization Behavior, Hersey and Blanchard provides a statement of the general framework underlying the concepts that will be discussed during the Conference. This multiple choice test should be completed after you read Management of Organization Behavior. It is to help clarify your understanding of the concepts prior to the conference. You may refer to the book as you answer the questions.

Select the alternative which completes the sentence best, even though others may not be wrong. **CHOOSE ONLY ONE.**

1. Leader Behavior

   a. ___ is based on a person's values developed through early parental training

   b. ___ can shift with changes in insight regarding its causes and consequences

   c. ___ is difficult to change unless one's boss changes also

   d. ___ is established by the influence of childhood institutions or organizations (school, church, etc.) which give one experience in organization systems

   e. ___ is dynamic and shifts with job experience in supervisory positions
2. The concepts set forth in Management of Organization Behavior apply to

a. capitalistic systems only, since they return a profit or can be measured in economic terms

b. organizations which have a production or service purpose

c. managerial members of an organization who have more than a high school training

d. industrial situations, especially where production can be measured

e. any number of people who are either formally or informally grouped

3. In viewing the four basic leader behavior styles, it is important to understand that effective leader behavior

a. as a rule is more fluid than fixed

b. depends heavily on the leader's environment including the organization in which he holds membership

c. is acquired as a person gains work experience, and, as such, is modified as his experience grows

d. can be designated by identifying one position (not necessarily the corner) on the basic model for any given person

e. may shift with changing circumstances inside and outside the person

4. Leadership behavior which takes advantage of authority and obedience as the basis for control are likely to (High Task)

a. hold the assumption that the most effective means for obtaining high production is through telling followers what to do and how to do it

b. view people as responsive to the organization purpose of production when leadership is strong but not unreasonable

c. treat people as individuals who need different degrees of authority in order to perform at their best

d. place heavy reliance on getting the job done but have little regard for procedures, schedules or standards except as controls
e. ___ assume that people work best when they are instructed clearly and concisely how and why assignments must be carried out

5. A leader concerned mainly with production would (High Task)

a. ___ appreciate a subordinate who does more than is expected of him

b. ___ respect a subordinate who is willing to stand up to him

c. ___ respect a subordinate who offers good suggestions toward solving production problems

d. ___ shows his appreciation for outstanding good work by easing up on control over details

e. ___ expect employees to comply with work requirements, without giving them recognition

6. The relationship pattern between a highly production oriented supervisor and his subordinate is usually (High Task)

a. ___ dependent upon the supervisor's level in the organization

b. ___ determined by the job description of each

c. ___ the same off the job as on it

d. ___ one of respect, particularly where production demands can be met by the subordinate

e. ___ one where influence flows downward in the organization

7. A long term consequence of production centered leadership in our culture, is likely to be (High Task)

a. ___ a stable relationship with the union which develops respect for management's interest in maintaining production

b. ___ close to full realization of human potential in a production setting

c. ___ an increased need for technically trained managerial personnel

d. ___ a shift toward apathy and indifference in the work force

e. ___ long term, small but steady increase in production
8. A leader who has high concern for the welfare of his followers (High Relationship)
   a. ___ tries to let followers do what they want, as they can best determine what they need
   b. ___ places heavy emphasis on morale with appropriate emphasis on production
   c. ___ is likely to achieve a positive human relations atmosphere which contributes toward a relative frictionless operation
   d. ___ uses the grapevine and other informal channels of communication to keep himself informed of where morale is slipping
   e. ___ concerns himself with the feelings of his people, whether or not they seek his help

9. A leader who is highly people centered in his supervision is most likely to (High Relationship)
   a. ___ want respect from his subordinates
   b. ___ desire loyalty and admiration from his followers
   c. ___ have his friendly attitude toward people be interpreted as showing partiality
   d. ___ achieve warm acceptance but not necessarily respect from followers
   e. ___ treat his followers differently because each is a person in his own right and merits consideration

10. A leader who is able to withhold personal feelings of involvement in either the production or people aspect would (Low Task & Relationship)
    a. ___ not confront conflict unless his superior were there to insure he did
    b. ___ do what he could to lessen conflict so he could avoid dealing with it
    c. ___ "turn his head" to conflict to avoid being drawn in
    d. ___ ask questions from a neutral point of view to give the appearance of interest without becoming involved.
    e. ___ step in with procedural suggestions when differences arise
between others, in order to avoid being asked for his opinion

11. A leader whose main concern is job security is likely to (Low Task & Relationship)

   a. ___ maintain minimum contact with his superior to insure work is satisfactory and his job is not in jeopardy

   b. ___ want clear instructions from his superior so he can't get into trouble by inappropriate action

   c. ___ perform his work in any manner he sees fit in order to get it done

   d. ___ avoid his superior on the job, but seek association with him outside to strengthen his chances of personal organization survival

   e. ___ shift responsibility to others whenever possible

12. When an individual's dominant motivation within the work setting is personal survival he (Low Task & Relationship)

   a. ___ cultivated the skill of being present while remaining uninvolved

   b. ___ embraces organization goals as a means to his personal survival

   c. ___ follows closely what others are doing in order to avoid exposure by being different

   d. ___ does a little more than the average to insure his position is secure

   e. ___ has reached a state of adjustment where personal behavior has lost real meaning

13. A leadership orientation which seeks to create working conditions where people feel a stake in accomplishing organization purpose rests on the concept that people (High Task & Relationship)

   a. ___ have the capacity to be challenged by work

   b. ___ can be motivated by economic rewards which are tied directly to output and reinforced by participation

   c. ___ can find satisfaction in any work situation if their views are considered
d. ___ are highly oriented to a need for personal achievement which can best find expression through work.

e. ___ are gregarious and, when organized in groups, will become committed to achieving the organization's purpose.

14. Achieving control through understanding of and agreement to organization purpose means that (High Task & Relationship)

a. ___ people will be committed to rules when they understand them.

b. ___ people will support their superior's managerial values when they agree with them.

c. ___ participation in creating conditions of work is likely to be necessary for establishing self-control.

d. ___ when a follower understand what he is responsible for and agrees to do it as a condition of work then he can be held accountable.

e. ___ all members of the work team need to actively participate in dividing up job responsibilities in order for full coordination of effort to take place.

15. Commitment under conditions where needs for production are integrated with human needs is high because (High Task & Relationship)

a. ___ of the personal desire to achieve of those promoted in the organization hierarchy.

b. ___ people feel wanted as it is recognized that they are an essential part of the organization.

c. ___ people feel an identification with achieving needed outcomes.

d. ___ interpersonal conflict and friction in the work situation are reduced as they appear.

e. ___ physical working conditions are arranged to promote participation and interaction among members of the work team.
16. Mutual respect and trust in the work setting stems from (High Task & Relationship)

a. __open, candid communication on work issues

b. __expressing one's feelings directly to those involved rather than hiding them

c. __supporting and strengthening positive features of individual behavior and accepting (not smoothing over) negative ones

d. __each person's trying to exceed what is expected - going more than half way - so that there is confidence that each will carry his share

e. __giving people autonomy and extending confidence to them
Evaluation of Work Group Effectiveness

The following five items: COMMITMENT TO OBJECTIVES; COMMUNICATIONS; DECISION MAKING; CONFLICT; and CLIMATE will be used to critique work group activity.

1. Individual evaluation of work group. Each person will distribute 100 points among the alternatives for each item as he evaluates the activity of his work group.

2. Work Group evaluation. The group will discuss the point allocation for every item to reach by consensus a single distribution that represents member understanding of how work group activity took place. Any approach that assures that the thinking of each member on each item is heard and considered may be used. Averaging of individual answers to get a single work group rating is to be avoided.

The purpose is to probe for differences in points of view.

Commitment to Objectives

1.____ There was little consistent focus on the problem; we solved the problem as rapidly as possible based on past precedent.

2.____ We attempted to stay directly with the problem and we solved it as quickly and efficiently as possible.

3.____ We often seemed to be more interested in harmony than in getting the job done.

4.____ There was an attempt to look at the problem as broadly and deeply as possible. Involvement and creativity characterized the discussion.
Communications
1. ____ Ideas and opinions were expressed with little conviction and people listened with little evidence of concern.
2. ____ Ideas and opinions were expressed to "win own point", there was little listening to conflicting points of view.
3. ____ Ideas and opinions were expressed politely; we listened to all contributions attentively, no feelings were hurt.
4. ____ Ideas and opinions were expressed openly and with candor; there was close attention paid to both majority and minority opinions so that we could fully understand all points of view.

Decision Making
1. ____ Compromise was the key to decision making; the traditional decision resulted from majority rule.
2. ____ To complete the task, decisions were "railroaded" by one or a few.
3. ____ Decisions were made in such a way to give maximum consideration to all people; we didn't want to "rock the boat".
4. ____ After understanding all points of view, work group agreement resulted in decision to which all were committed.

Conflict
1. ____ There was very little open agreement or conflict.
2. ____ There was considerable unnecessary and unprofitable disagreement; competitiveness resulted in win-loss conflict.
3. ____ We were quite polite and pleasant; we took care to avoid conflict.
4. Disagreements were explored to help the group produce the best possible decision; conflict was confronted and resolved.

Climate

1. The discussion was rather flat and lifeless; comments slid from point to point with little evidence of commitment.
2. Competitive, tense, win-less conflict; one or more people tried to take over and control the decision.
3. Polite discussion, easy going and pleasant, a very friendly session.
4. Penetrating and challenging discussion; a very rewarding session to which we all were committed.

Style Diagnosis - "Patterns"

"Patterns" is a movie which deals with a series of managerial dilemmas. It depicts various approaches to coping with conflict in an emotionally charged environment.

The managerial actions of several characters in the film serve as the basis for this diagnostic project. In the course of their interaction the characters in the film reveal basic attitudes of concern for production tasks and people relations.

Procedure

1. Each individual working alone is to assess the actions of Ramsay, Sloan and Staples as to their Task Orientation and Relationship Orientation, and identify their Dominant and Supporting Leader Behavior Styles and Effectiveness
Dimension. In assigning these styles and determining the effectiveness dimension, develop reasons for your determinations to serve as the basis for your discussions in reaching work group consensus in Step 3.

2. Record your individual determinations on the answer sheet.

3. Each work group is to reach consensus as to the Dominant and Supporting Leader Behavior Styles and Effectiveness Dimensions for each of the assigned Characters.

4. Individual and Work Group answers will be scored and the Production Efficiency determined.

<table>
<thead>
<tr>
<th>Leader Behavior Style</th>
<th>Ramsay</th>
<th>Sloan</th>
<th>Staples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Task &amp; Relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Task</td>
<td></td>
<td></td>
<td></td>
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<td>High Relationship</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>High Task &amp; Relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Indicate the Dominant Leader Behavior Style with a (1) and the Supporting Style with a (2).
### EFFECTIVENESS DIMENSION

<table>
<thead>
<tr>
<th></th>
<th>Effective</th>
<th></th>
<th>Ineffective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+4</td>
<td>+3</td>
<td>+2</td>
</tr>
<tr>
<td>Ramsay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sloan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staples</td>
<td></td>
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</tr>
</tbody>
</table>

Indicate by a check mark your determination of the degree of Effectiveness or Ineffectiveness for each character in the film.

Minicopter, Inc.

**Identity of the Problem**

You are a professional manager. You have been hired to help develop an organization for a new company "MINICOPTER, INC." The Minicopter is a recently invented self-propelled machine resembling the old helicopter. (The Minicopter's blades are more "umbrella-like" and the whole machine is more compact than a unicycle). This revolutionary machine is electronically powered; no gasoline, oil or other lubricant is required. Each Minicopter has a capacity of two people, although greater comfort and increased ease in handling results when only one person is aboard.

The average cruising speed is thirty-five miles per hour, and the absolute ceiling is 5,000 feet. The ignition is turned on and off by a "sonar key", a special high-frequency device which is coded differently for each individual machine. After landing, the operator sends his minicopter aloft to his specially assigned parking altitude (around 150 feet) by means of his ground to air sonar key. He recalls it when
he is ready to travel again.

Your problem is to organize this new company. Organize the management in any way you see fit. The organization structure should be designed for the third year of operation. The sales at that time are projected to be $250 million dollars. The following general information is available to you.

Information Relevant to the Problem

1. The new company will receive its initial capital from investors who wish to remain inactive in the management of the company.

2. The company has a clear opportunity to popularize the product. It is conceivable that every person in the country over the age of 15 years could own a Minicopter. Safety, therefore, and a properly operating machine in the hands of users will be all important.

3. Although the company is the first in this field, (and thus has an excellent opportunity to put it's "head start" to good use) there is every reason to believe that competition will soon be very keen.

4. There are no unions in the picture at the present time, but you can be reasonable certain that they will attempt to get a foothold in the near future. Jurisdictional disputes may delay this for a short time, but the possibility of unionization is still a major factor which will have to be considered in your organization.

5. Loyalty to the company by both management and employees will be vital if MINICOPTER, INC. is to mass produce the absolutely
safe, "quality" machine which the inventor has developed, tested, and placed in our hands. The future competitors will certainly want to "raid" our company's best people, and you must have this in mind as you design your organization.

6. It should be remembered that the company is organizing not alone for the short range purpose of getting this product on the market, but also to achieve a great and lasting success in the "long run".

7. The legal organization has been completed and MINICOPTER, INC. exists as a legal entity.

Assignment

1. You are to design an organization for this new company. Your design may take any form you think appropriate, but it should include all of the management areas you feel would be essential for the successful operation of the company. Use a Broad Brush, the details so necessary for actual operations often serve to obscure the basic structure of an organization. The structure and the functions it supports is what will be important to our discussions.

2. Draw, or chart, the essential organizational design as you have developed it. It is not necessary that this drawing or chart be elaborate, but it should clearly show the basic design you have in mind. Jot down notes as you prepare your design to aid in the discussion.

3. Identify five (5) key items which you think are most important to an effective organization; the areas which must be worked on and solved as a basis for achieving organizational effectiveness.
4. Copy your organization design on the attached answer sheet with your list of Key Items.

**Non-Evaluative Personal Feedback**

**Purpose**

Key issues of leadership competence include:

1) personal skill in coping with win/lose and other kinds of conflict

2) developing and maintaining sound convictions

3) readiness to change one's mind in the light of new evidence

4) obtaining quality results even under time and other pressures

5) achieving effective teamwork through integrating the joint efforts of several, and

6) the attainment of genuine agreement and commitment

This activity is to aid each individual to study his own leadership behavior. The objective is to increase a person's understanding of his own leader behavior style in situations which can influence his effectiveness as a manager. In other words, he should be aided to see how he has worked with others in problem solving activities from the standpoint of Commitment to Objectives, Communication, Decision-Making, Conflict and Climate.

The objective is **not** to probe into a person's subjective and personal life. What is important is to aid each person to see his leader behavior style and to become aware of his relative effectiveness. The list of Non-evaluative Feedback Elements is provided to aid the group in providing the best feedback possible to each individual member of the group.
The lectures, reading materials, and work group activities have been designed to aid individuals to acquire a framework for assessing leader behavior styles. The work group activities and evaluation sessions have provided an opportunity for work group members to observe and react to one another under problem solving conditions.

**Procedures**

1) It is suggested that each work group spend about ten minutes per member in pointing instances of relevant leadership behavior. By jotting these as descriptive examples on flip chart paper, they will be available for reference in selecting appropriate descriptive phrases from the list on Non-evaluative Personal Feedback Elements.

2) Select from the list of Non-evaluative Personal Feedback Elements appropriate elements to describe each work group member's leadership behavior. If an element as given does not quite satisfy the work group as being fully appropriate, you may modify the statement as you choose. Record your selection of elements for each member on flip chart paper.

3) It is suggested that you evaluate your work group effectiveness from time to time during this activity, and experiment with various alternative approaches as seem appropriate.

**Non-Evaluative Personal Feedback Elements**

1. At times, tended to withdraw and show little or no interest in working with the group.
2. Was fully involved and committed to reaching effective solutions to group problems
3. Seemed to be more interested in harmony than in getting the job done
4. Pushed to solve the problem as efficiently as possible
5. Seemed to avoid conflict even when the conflict could be constructive
6. Used conflict, even when conflict was not constructive
7. Although he did not seek it, confronted conflict and attempted to resolve it.
8. Tended to listen too much and talk too little
9. Paid too much attention to irrelevant talk, not to hurt the feelings of others
10. Tended to talk too much and to listen too little
11. Tended to dominate the discussion
12. Expressed ideas politely and listened attentively to all contributions
13. Contributions were creative, of good quality, and were directly related to objectives
14. Ideas and opinions were expressed with candor
15. Paid close attention to all opinions in an attempt to fully understand all points of view
16. Compromised own point of view to reach a decision
17. Sometimes attempted to railroad decisions
18. Own point of view was not pushed for fear of "rocking the boat"
19. Made decisions after fully considering all points of view
20. Didn't really seem very involved
21. Attempted to draw other people into the discussion
22. Was more interested in harmony than in getting the job done
23. Was more interested in getting own point of view accepted than in accomplishing group objectives
24. Exercised much leadership over the group
25. Although not generally in a leadership capacity, made many valuable ideas
26. Gave and encouraged suggestions on how to do things better
APPENDIX III

TEST AND MEASURES

Concept Test

This questionnaire is designed to measure your knowledge of organization behavior concepts; motivation and leadership.

Select the one best answer, even though others may not be wrong.

CHOOSE ONLY ONE ANSWER TO EACH QUESTION.

1. Motives are
   a. hoped for rewards
   b. outside the individual
   c. incentives
   d. the "whys" of behavior
   e. a and d

2. An individual's ability and his motivation will have an impact on
   a. incentives
   b. performance or achievement
   c. the "mainsprings" of action
   d. hoped for rewards
   e. mobility

3. The activity in which a person engages depends on
   a. the compensation
   b. the need with the greatest strength
   c. status
d. the individual

4. Availability

a. tends to be associated with incentives (goals)
b. is perceived probability of satisfying a particular need
c. is the perceived limitations of the environment
d. a and c
e. a and b

5. As one engages in goal-directed behavior, it tends to

a. increase the strength of the need
b. decrease the strength of the need
c. satisfy lower level needs
d. frustrate the need
e. a and c

6. The managerial grid implies that the most desirable leader behavior is

a. relationship-oriented
b. team management
c. high task and high relationships
d. d and c
e. none of the above

7. Increased participation in decision-making

a. will always have a positive influence on workers
b. tends to be effective in our society
c. is not universally effective as a management practice
d. all of the above
8. Achievement of organizational goals is linked to
   a. the satisfaction of the needs of the workers
   b. capital
   c. the degree of cooperation between labor and management
   d. the degree of conflict between organizational, management and employee goals
   e. size of the organization

9. The Tri-dimensional Leader Effectiveness Model uses which of the following dimensions
   a. the leader
   b. the follower
   c. the other situational variables
   d. all of the above
   e. none of the above

10. A leader might be effective in a given situation
    a. if he is high on relationships behavior
    b. if he is high on both task and relationships behavior
    c. if he is low on both task and relationships behavior
    d. all of the above
    e. none of the above

11. The "best" style of leader behavior is
    a. high task and high relationships
    b. high relationships
    c. high task
    d. low task and low relationships
    e. none of the above
12. Rate Busters are sometimes not tolerated by informal work groups because
   a. the informal leader perceives them as a threat to his power
   b. they weaken the group and its power with management
   c. they are often unfriendly and are not likeable
   d. they encourage work restriction
   e. none of the above

13. McGregor's Theory X assumes that
   a. work is as natural as play, if the conditions are favorable
   b. self-control is often indispensable in achieving organizational goals
   c. people can be self-directed and creative at work if properly motivated
   d. motivation occurs only at the physiological and security level
   e. none of the above

14. In the final analysis, leader-follower relations within an organization are defined by
   a. the authority structure within the organization
   b. written or unwritten job descriptions
   c. a leader's assumptions about himself as well as his interpretation of the behavior of followers
   d. policies formulated at the top and implemented lower down in the organization
   e. the nature of the product or service produced

15. The Tri-Dimensional Leader Effectiveness Model is concerned with
   a. the degree of production obtained within an organization under different styles of leadership
   b. the degree that the needs of people, as measured against production, are actually met
c. how people accomplish organization purpose through hierarchy

d. distinguishing, in any given situation, how much production is obtained and how much consideration is given to people

e. the way in which authority is used to control people within an organization

16. A long term consequence of production centered leadership (High Task) in our culture has tended to be

a. a stable relationship with the union which develops respect for management's interest in maintaining production

b. close to full realization of human potential in a production setting

c. an increased need for technically trained managerial personnel

d. a shift toward apathy and indifference in the work force

e. long term, small but steady increase in production

17. Leadership behavior which integrates the needs of the organization and the needs of the individual

a. is the most effective leader behavior style

b. may be the most effective leader style if it fits the personality of the leader

c. may be ineffective in some situations

d. is the most effective style when used in our culture

e. is the most effective leader style for use in industry in Nigeria

18. The effectiveness of a basic leader behavior style depends on

a. the situation in which it is used

b. the leader's success in getting followers to accomplish a given task

c. the appropriateness of this behavior style to the situation

d. net profits obtained for the company

e. the extent to which the leader satisfies the requirements and objectives of his position
19. The four effective and the four ineffective leader behavior styles are in essence
   a. a measure of a leader's performance
   b. the intervening variables which reflect the current condition of the internal state of the organization
   c. measured by productivity or output
   d. how appropriate a leader's basic style is to a given situation as seen by his follower's supervisors and associates
   e. how they are perceived by superiors

20. Leadership is
   a. the process of influencing the activities of an individual or group in efforts toward goal achievement in a given situation
   b. the process of working with or through people in an effort to accomplish organizational goals
   c. being responsible for the work of at least one other person, with formal authority over that person
   d. the accomplishment of individual goals
   e. the accomplishment of organization goals

21. A leader's behavioral style is
   a. the way the leader behaves in a leadership situation
   b. the way others perceive the leader's behavior in the leadership situation
   c. the effectiveness the leader attains in accomplishing organization goals
   d. the ability of the leader to reconcile organization and personal goals
   e. the ability of the leader to reconcile follower goals and organization goals.

22. Leaders with low ability to vary their behavior styles
   a. are ineffective leaders
b. may be effective in routine, bureaucratic situations

c. may be ineffective in situations requiring non-routine decision making

d. may be effective if the situation is appropriate to their behavioral style

e. are effective leaders

23. A leader with a wide range of behavioral style (adaptability)

a. is an effective leader

b. to be effective must diagnose the needs of the situation

c. to be effective must be able to change his behavioral style

d. to be effective must be able to adapt his behavior style to the needs of the situation

e. may be an ineffective leader

24. Diagnosing a leadership situation to determine the appropriate behavioral style involves

a. the behavioral expectations of superiors, associates and followers

b. knowing the range of organization behavior expectations

c. the overlapping personality and expectations of all important situational elements in the environment

d. the behavioral styles of superiors, associates and followers

e. knowing job requirements

25. To increase leadership effectiveness in the short run, a leader

a. must change his leader behavior style

b. must increase his range of leader behavior style adaptability

c. may clarify his basic leader style to his followers to assure their understanding

d. may change the behavioral style of his followers

e. should clarify the organization's policies
26. The need structures of followers in our culture tend to
   a. be basically physiological and safety, security needs
   b. depend for their fulfillment on pay, incentive plans, hospitalization, etc.
   c. require high degrees of external controls
   d. be increasing belongingness, achievement and development of their potential
   e. create negative reactive responses

27. A leader's high expectations for his followers
   a. results in follower frustration and failure
   b. results in high performance by the follower
   c. causes the follower to try to justify his superior's good estimate of him by high performance
   d. is built on high trust and respect for the leader
   e. is an effective leadership cycle

28. The ineffective cycle of low expectations-low performance can be changed
   a. by firing the subordinate
   b. by reinforcing positively, progressively improved performance
   c. by superior responding to the low performance of the subordinate by high expectations
   d. by the subordinate attaining the high performance in the face of low expectations by the superior to earn trust and respect
   e. by negatively reinforcing poor performance
Work Group Descriptions

Co. Team Name

Below are some statements which may be used to describe the group in which you work.

Your work group consists of yourself and all the people working together under the supervisor whose name you have written on the first page.

Directions

1. Please read each statement carefully
2. Decide how well the statement describes your group
3. Draw a circle around one of the five symbols following each statement to describe your group as accurately as possible

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

1. The members of my group regard each other as friends
   A B C D E

2. This group turns out more work than most groups here
   A B C D E

3. The group feels it is an important part of the Company
   A B C D E

4. This group tackles any job with enthusiasm
   A B C D E

5. The group puts pressure on the member who gets out of line
   A B C D E
6. The members of the group are very cooperative
7. The group has an excellent production record
8. My group feels it is a part of the Company team
9. The group has quit trying
10. The member who is different is not very popular in this group
11. The group members know that they can depend on each other
12. The group turns out as much work as management expects
13. The group feels a strong loyalty to the Company
14. The group tries to be on top in everything it does
15. The group expects each member to do about the same amount of work
16. The group members stand up for each other
17. The work of the group seems to drag
18. The group is divided in its loyalty to the Company
19. The group works hard on any job it undertakes
20. The group has its own rules that each member is expected to observe
21. Members of the group work together as a team
22. This group gets a job done on time
23. My group would support the Company in almost any emergency
24. The group shows a lot of pep and enthusiasm
25. The members know what to expect of each other
Job Satisfaction

Co. Team ........................................... Name ...........................................

How is your job at the present time? Do you think it is very good, good, fair, poor, or very poor?

Directions

1. **Read** each of the following items that describe something about your job.

2. **Decide** whether it is very good, good, fair, poor, or very poor.

3. **Draw a circle around** the symbol that best describes your job. Do this for each Item.

   VG = Very Good
   
   G = Good
   
   F = Fair
   
   P = Poor
   
   VP = Very Poor

1. Management's interest in welfare of employees
   
   VG G F P VP

2. This company as a place to work
   
   VG G F P VP

3. Appreciation shown here for my work
   
   VG G F P VP

4. Fair treatment of employees by management
   
   VG G F P VP

5. This company's reputation in the Community
   
   VG G F P VP

6. Feeling that my job is regarded as important
   
   VG G F P VP

7. Management's planning for the future
   
   VG G F P VP

8. Communications from Company to its employees
   
   VG G F P VP

9. Credit given by my supervisor for doing a good job
   
   VG G F P VP
10. Management understanding of workers' problems
   VG G F P VP

11. My pride in working for this company
    VG G F P VP

12. Credit given by company for good work
    VG G F P VP

**Job Expectations**

How is your job in comparison with what you think it should be? Is it much better than you expect, better than you expect, about the same as you expect, poorer than you expect, or much poorer than you expect?

**Directions:**

1. **Read** each item carefully

2. **Decide** whether it says something about your job that is much better than you expect, better than you expect, about the same as you expect, poorer than you expect, or much poorer than you expect?

3. **Draw a circle around** one of the five symbols to show how well the item meets your expectations. Do this for each item.

   MB = Much better than expected

   B = Better than expected

   S = Same as expected

   P = Poorer than expected

   MP = Much poorer than expected

1. Satisfaction with my present job
   MB B S P MP

2. My chances of getting ahead in this Company
   MB B S P MP

3. My friends' opinions about the Company
   MB B S P MP
4. The amount of money I am paid
5. Freedom to make decisions about my work
6. My family's pride in my job
7. Chances of keeping this job as long as I want it
8. My happiness in my work compared to most people
9. Satisfaction with my progress here
10. My job compared with my friends' jobs
11. Pay here compared to other places
12. Freedom to use my own judgement in my work
13. What my family thinks about the Company
14. Chances of steady work
15. Liking for the work I am doing here
16. My chances of going as high as I want to go here
17. My advancement compared with that of my friends
18. Pay compared to what my work is worth
19. Ability to plan ahead in my work
20. Interest of my family in my work here
21. Chances of staying on this job till retirement
22. Interesting work to do
23. Advancement on the basis of ability
24. My pay compared with the pay of my friends
25. The pay for overtime
26. Freedom to express my opinions to my supervisor
27. My family's satisfaction with my advancement here
28. Steadiness of work here compared with most places
Leader Behavior Description Questionnaire

Directions:

a. **Read** each item carefully.

b. **Think** about how frequently the leader engages in the behavior described by the item.

c. **Decide** whether he always, often, occasionally, seldom or never acts as described by the item.

d. **Draw a circle** around one of the five letters following the item to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

1. He does personal favors for group members.
   A B C D E

2. He makes his attitudes clear to the group.
   A B C D E

3. He does little things to make it pleasant to be a member of the group.
   A B C D E

4. He tries out his new ideas with the group.
   A B C D E

5. He acts as the real leader of the group.
   A B C D E

6. He is easy to understand.
   A B C D E

7. He rules with an iron hand.
   A B C D E

8. He finds time to listen to group members.
   A B C D E

9. He criticizes poor work.
   A B C D E

10. He gives advance notice of changes
    A B C D E

11. He speaks in a manner not to be questioned
    A B C D E

12. He keeps to himself
    A B C D E
13. He looks out for the personal welfare of individual group members.

14. He assigns group members to particular tasks.

15. He is the spokesman of the group.

16. He schedules the work to be done.

17. He maintains definite standards of performance.

18. He refuses to explain his actions.

19. He keeps the group informed.

20. He acts without consulting the group.

21. He backs up the members in their action.

22. He emphasizes the meeting of deadlines.

23. He treats all group members as his equals.

24. He encourages the use of uniform procedures.

25. He gets what he asks for from his superiors.

26. He is willing to make changes.

27. He makes sure that his part in the organization is understood by group members.

28. He is friendly and approachable.

29. He asks that group members follow standard rules and regulations.

30. He fails to take necessary action.

31. He makes group members feel at ease when talking with them.

32. He lets group members know what is expected of them.

33. He speaks as the representative of the group.

34. He puts suggestions made by the group into operation.

35. He sees to it that group members are working up to capacity.
36. He lets other people take away his leadership in the group. A B C D E

37. He gets his superiors to act for the welfare of the group members. A B C D E

38. He gets group approval in important matters before going ahead. A B C D E

39. He sees to it that the work of group members is coordinated. A B C D E

40. He keeps the group working together as a team. A B C D E

**Ideal Leader Behavior**
(What You Expect of Your Leader)

**Directions:**

a. **Read** each item carefully.

b. **Think** about how frequently the leader **should** engage in the behavior described by the item.

c. **Decide** whether he **should** always, often, occasionally, seldom or never act as described by the item.

d. **Draw a circle** around one of the five letters following the item to show the answer you have selected.

   A = Always
   B = Often
   C = Occasionally
   D = Seldom
   E = Never

**What the Ideal leader should do:**

1. Do personal favors for group members A B C D E

2. Make his attitudes clear to the group A B C D E
3. Do little things to make it pleasant to be a member of the group  

4. Try out his new ideas with the group  

5. Act as the real leader of the group  

6. Be easy to understand  

7. Rule with an iron hand  

8. Find time to listen to group members  

9. Criticize poor work  

10. Give advance notice of changes  

11. Speak in a manner not to be questioned  

12. Keep to himself  

13. Look out for the personal welfare of individual group members  

14. Assign group members to particular tasks  

15. Be the spokesman of the group  

16. Schedule the work to be done  

17. Maintain definite standards of performance  

18. Refuse to explain his actions  

19. Keep the group informed  

20. Act without consulting the group  

21. Back up the members in their actions  

22. Emphasize the meeting of deadlines  

23. Treat all group members as his equals  

24. Encourage the use of uniform procedures  

25. Get what he asks for from his superiors  

26. Be willing to make change
27. Make sure that his part in the organization is understood by group members
28. Be friendly and approachable
29. Ask that group members follow standard rules and regulations
30. Fail to take necessary action
31. Make group members feel at ease when talking with them
32. Let group members know what is expected of them
33. Speak as the representative of the group
34. Put suggestions made by the group into operation
35. See to it that group members are working up to capacity
36. Let other people take away his leadership in the group
37. Get his superiors to act for the welfare of the group members
38. Get group approval in important matters before going ahead
39. See to it that the work of group members is coordinated
40. Keep the group working together as a team
BIBLIOGRAPHY

A. BOOKS


B. PERIODICAL ARTICLES


C. MONOGRAPHS


Stogdill, Ralph M. *Team Achievement Under High Motivation*. Columbus: The Ohio State University Bureau of Business Research, Monograph Number 113, 1963.
Stogdill, Ralph M. *Managers, Employees, and Organizations*. Columbus: The Ohio State University Bureau of Business Research, Monograph Number 125, 1965.

D. THESES AND DISSERTATIONS
