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Brown, Susan Holmes

DIFFERENTIAL EFFECTS OF LEADER STYLE AND GROUP MATURITY  
UPON SUBORDINATE SATISFACTION, TASK EFFECTIVENESS, AND TASK  
EFFICIENCY

*The University of Oklahoma*

PH.D. 1982

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DIFFERENTIAL EFFECTS OF LEADER STYLE AND GROUP  
MATURITY UPON SUBORDINATE SATISFACTION,  
TASK EFFECTIVENESS, AND TASK EFFICIENCY

A DISSERTATION  
SUBMITTED TO THE GRADUATE FACULTY  
in partial fulfillment of the requirements for the  
degree of  
DOCTOR OF PHILOSOPHY

by  
Susan Holmes Brown  
Norman, Oklahoma  
1982

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DIFFERENTIAL EFFECTS OF LEADER STYLE AND GROUP  
MATURITY UPON SUBORDINATE SATISFACTION,  
TASK EFFECTIVENESS, AND TASK EFFICIENCY

APPROVED BY

*H. W. Langford*  
*James K. Michael*  
*Robert M. Brown*  
*William B. Lieberman*  
*William Carmack*

DIFFERENTIAL EFFECTS OF LEADER STYLE AND GROUP  
MATURITY UPON SUBORDINATE SATISFACTION,  
TASK EFFECTIVENESS, AND TASK EFFICIENCY

Abstract

This study tested the effects that four different leadership styles had upon groups' satisfaction, effectiveness, and efficiency. Fifty-six groups consisting of four to seven members each completed a subarctic survival simulation and reached a consensus decision. Half of the groups were mature and the other half were immature. Half of the groups were led in the task by a leader whose style was appropriate to their maturity level, while the other half were led by an inappropriate leadership style. Hypotheses posited that groups who were matched with a leadership style which was appropriate to their maturity level would demonstrate higher levels of satisfaction, effectiveness, and efficiency. The results indicated that groups who were correctly matched with an appropriate style were significantly more satisfied than groups who were incorrectly matched. Inconsistent results were found for effectiveness and efficiency. The results also indicated that mature groups out-performed immature groups even when both groups were correctly matched with an appropriate leadership style. The results of this study have both practical and theoretical implications for leadership. These implications and suggestions for future research are discussed.

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Differential Effects of Leader Style and Group  
Maturity upon Subordinate Satisfaction,  
Task Effectiveness, and Task Efficiency

Introduction

History reveals that the word "leadership" did not appear in the English language until around the year 1800. Although the concept has not been examined intensively until the last three or four decades, researchers are now attentively inquiring into how and why people become leaders, what behaviors leaders exhibit, and how leaders affect group performance. Recent reviews of small group research in the fields of sociology, social psychology, and communication reveal that more attention has been focused on the study of leadership than any other concept in the small group process.

For years researchers have attempted to conceptualize leadership, yet the concept remains elusive. Stoner (1978) notes there are almost as many definitions for leadership as there are people who have attempted to define it. Stogdill (1968) also notes this divergence among definitions when he states that leadership has been viewed in the following ways: An effect of interaction (Bogardus, 1929; Jennings, 1944);

structure initiation (Hemphill, 1950; Homans, 1950; Stogdill, 1959); a differential role (Sherif and Sherif, 1956); an outcome of group processes (Cooley, 1962; Kretch and Crutchfield, 1948); the exercise of influence (Stogdill, 1950); an act or behavior (Hemphill, 1949); a set of personal characteristics (Bernard, 1926; Bogardus, 1934); the act of inducing compliance (Allport, 1924; Bennis, 1959); a type or form of persuasion (Schenck, 1928); a power relationship (French and Raven, 1960); and a goal achievement instrument (Cattell, 1951; Cowley, 1928).

Likewise, through the years numerous perspectives have been emphasized; among these are traits (Geier, 1967; Bird, 1940; Stogdill, 1948); styles (Sargent and Miller, 1971; Lippitt and White, 1943; Gibb, 1969); situations (Barnlund, 1962; Fiedler, 1976); and functions (Bales, 1958; Likert, 1967; Fisher, 1980; Cartwright and Zander, 1968).

The trait approach contends that certain individuals possess personal characteristics which allow them to fulfill the leadership role. Early conceptions of leadership attributed the success of outstanding leaders to their possession of extraordinary abilities (e.g., tireless energy, intuition, foresight) or physical characteristics (e.g., height, weight, physical attractiveness). Stylistic approaches emphasize the communication behavior of leaders; for example, authoritarian leaders generally behave in ways that give subordinates very little responsibility, while democratic leaders give

subordinates a great deal of input into the decision-making process. Unlike the trait approach, this perspective insists behavior can be learned. The functional approach provides a classification scheme for leadership behavior. This perspective suggests what leaders do, not what leaders are, is important. The major objective of the situational (also termed contingency) approaches is to determine which leadership styles are most effective in any given situation. In essence, situational-contingency approaches suggest that the appropriateness of a leader's style is not universal, but is dependent upon certain circumstances.

It is little wonder that so much time and effort has been expended in attempting to identify the characteristics associated with effective leadership. It has long been recognized that the success of any group, organization, or political system depends on the successful guidance of human beings. Yet, the search for a more thorough understanding of leadership has been hampered by serious methodological and conceptual problems. For instance, Korman (1966) points out a neglect in conceptualizing situational variables that are influential in leadership effectiveness; Oaklander and Fleishman (1964) reveal a lack of precision in defining the criteria of effectiveness; and Hollander (1971) accuses researchers of ignoring the process of leadership in a variety of contexts. All are valid criticisms and point to the fact that successful leaders must be able to diagnose the demands

of their subordinates and adapt their leadership styles to fit these demands.

The primary objective of this investigation is twofold: (1) to review and critique the various leadership style typologies, and (2) descriptively formulate and empirically test a framework which includes the variables that interact to determine effective leadership. The present study shares many of the characteristics of the situational-contingency framework, for it suggests that the particular communication style which a leader exhibits must be "matched" to the appropriate level of a group's maturity. Unlike the static approaches advanced by the trait theorists, this study posits that for optimal group performance, leader styles should continually change in predictive directions as the group's maturity level increases. Thus, the overall research question investigated here is, "Will leadership style, when harmonious with a group's maturity level, lead to greater group achievement in terms of satisfaction, effectiveness, and efficiency?" To investigate this question, twenty-eight hypotheses are tested. The three general categories are as follows:

Subordinate satisfaction will be significantly different between mature and immature groups.

Task effectiveness will be significantly different between mature and immature groups.

Task efficiency will be significantly different between mature and immature groups.

Chapter 1 outlines the rationale for the hypotheses and reviews the relevant literature. Chapter 2 describes the procedures for testing these hypotheses, while Chapter 3 presents the results from the study. Chapter 4 provides interpretation, discussion, and some conclusions.

## Chapter I

### RATIONALE

The goal of this study is to determine the effects that varying leader styles (Shawchuck, 1978) and group maturity (Hersey and Blanchard, 1977) have upon subordinate satisfaction, task effectiveness, and task efficiency. The major research question investigated here is: "Will variations between a leader's style and group's maturity level produce differences in a group's task effectiveness, task efficiency, and subordinate satisfaction?" This study asserts that differences will be found. As will be seen, the argument here is that the closer the match between a leader's style and the group's maturity level, the greater will be the effectiveness, efficiency, and satisfaction of the group. As the leader's style adapts to the maturity level of the group, a more favorable work climate is produced which allows for a fulfilling and enjoyable work experience, with the proper blend of task-related and socio-emotional messages. Task-related messages allow the group to better achieve its goals, while the socio-emotional messages are aimed at interpersonal relationships within the group and seek to maintain the group as a cohesive, working unit.

The following general hypotheses hinge upon the idea that more favorable outcomes result when the leadership style is appropriately matched to the group's maturity level:

(1) Subordinate satisfaction will significantly vary as a function of whether the group is mature or immature; (2) task effectiveness will significantly vary as a function of whether the group is mature or immature, and (3) task efficiency will significantly vary as a function of whether the group is mature or immature.

This investigation is message-centered and is developed from a communication perspective. The results are intended to be added to the large body of communication, management, and organizational behavior leadership literature. That the study is communication-based is apparent for two reasons. First, leader styles are defined by and exhibited through interactive communication behaviors. Communication, then, is a necessary condition for the existence of any leadership style. Without communication, the style a leader exhibits is meaningless. Only through communication behaviors are subordinates able to tell what a leader requires of them. Likewise, only through communication behaviors are researchers able to distinguish one set of demands which constitute a particular "style" from another. Without the specification of communication behaviors, the study of how one leader presents him or herself to subordinates is an impossible task.



Second, much information regarding leadership style exists from a management or organizational behavior perspective. The focus of organizational research is often on identifying the antecedent conditions which affect a leader's style, or on the effects that a leader's style has upon a group or organization in which the leader operates. A communication perspective, such as that undertaken here, requires a focus on the message transmitted from one person to another. In this study, the primary emphasis is on the presentational means that leaders employ in communicating with subordinates. The design creates differences in these messages which produce four distinct styles. Differences in a group's performance are directly attributable to these specific leader styles. Critical to an understanding of the communication perspective employed here is that the types of messages a particular leader style communicates to group members is an integral part of the study. Unlike its counterpart research in management and organizational behavior, the message itself is emphasized, rather than assumed.

#### Orientations to Leadership

Although a leader's behavior encompasses much more than style, the style itself may be defined through the leader's interaction patterns with subordinates. Thus, style refers to a characteristic pattern of leader behavior which can be linked to communication style.

Within the last four decades, two primary orientations to the study of leadership have emerged: Trait/Behavior orientations and Leader Effectiveness orientation. The orientations share few similarities; however, each tends to view leadership as a functional role within the small group process. Behavioral typologies are concerned with the specification of actual leader behaviors. The trait approach to leadership tends to focus on what a leader is, rather than what a leader does. In contrast, behavior approaches to leadership attempt to identify what leaders do when leading. Representative typologies are reviewed below. While most of the literature reviewed in this section centers on behavioral approaches, a contrast of such approaches with the older trait orientation is critical for an understanding of leadership from a behavioral perspective.

One of the earliest approaches to studying leadership was the trait approach. This approach contends that certain individuals possess characteristics that allow them to become leaders. The earliest attempts to identify specific traits focused solely on the personality characteristics of successful leaders (c.f., Carlyle, 1910). Bird (1940) conducted twenty studies in which 79 specific traits were found to be related to leadership. Filley and House (1969) discovered that social traits (e.g., sympathy, prestige, patience, tact); physical characteristics (e.g., physical attractiveness, weight, height); and personality traits (e.g., enthusiasm,

persistence, knowledge, originality, initiative) all interact to differentiate between effective and ineffective leaders.

Perhaps the most widely acclaimed review of trait approaches was reported by Stogdill (1948) in which he examined the results of 124 trait studies from 1904 through 1948. Stogdill noted that successful leadership characteristics appeared to depend on the circumstances or situation, e.g., physical prowess and athletic ability are desirable characteristics for young male gang leaders, while intellectual fortitude and integrity are associated with mature leadership. He delineated five traits most frequently associated with effective leaders: Capacity, achievement, responsibility, participation, and status. Stogdill noted these characteristics may vary with the situation.

Although Stogdill established the classification scheme for traits, he later posits that the traits are not consistently related to leadership. Whereas some traits were found to apply only to specific groups, other characteristics depended on the leader's social participation or procedural ability. Thus, Stogdill (1948) concludes:

A person does not become a leader by virtue of the possession of some combination of traits, . . . the pattern of personal characteristics of the leader must bear some relevant relationship to the characteristics, activities, and goals of the followers.

(p. 54)

The trait approach to leadership has several major weaknesses. First, after fifty years of research, no single leadership trait or set of traits has been found to discriminate between leaders and non-leaders (Applbaum, Bodaken, Sereno, & Anatol, 1974). Hence, at best, traits do not "make" leaders, but rather help us eliminate those persons who may not be leaders (Geier, 1967). Second, the trait approach tends to look at leaders in isolation. Research has demonstrated that effective leadership does not reside in the individual, but is dependent on both situational and environmental factors (Shaw, 1981). Third, trait approaches tend to ignore the actual behaviors of the leader. There is a difference between having the ability to do a task and actually performing the task effectively. Finally, the perceptions of specific traits, not the actual traits, must be taken into account. As Lashbrook (1975) has suggested, it matters little if a leader is intelligent if he or she is not perceived as such by subordinates.

#### Leader Behavior Orientations

As the research regarding specific leadership traits accumulated, it became evident that this level of analysis for understanding effective leadership could not be consistently, empirically supported (Bird, 1940; Gibb, 1947; Stogdill, 1948). Failure to adequately predict traits across situations resulted in new theoretical directions for leadership research--Leader Behavior investigations. Instead of attempting to

analyze what a leader is, the focus switched to observing what a leader does. In an attempt to understand the most recent leadership research, seven typologies of leadership--often referred to as leadership style--are discussed and critiqued below.

The Lewin, Lippitt, and White typology. Leader style has been operationalized in a variety of ways. Two of the earliest efforts which investigated styles were the classic studies by Lewin, Lippitt, and White (1939) and Lippitt and White (1943). These writers varied autocratic, democratic, and laissez-faire leadership styles across four groups of ten-year-old boys whose task was to construct paper masks. All groups were exposed to each of the leadership styles, while interaction patterns, aggression, hostility, affective reactions, and quantity and quality of the product were measured. The authors define an autocratic leader as one who determines all the group policies and dictates the work tasks. A democratic leader is defined as one who allows the group members to determine policy matters and is objective in praise and criticism. Finally, a laissez-faire leader is one who does not participate in the group's activities, and gives the group members complete freedom. The laissez-faire leader does provide information when requested, but generally does not comment on the member's activities.

The Lewin, Lippitt, and White leadership typology depicts the leader-follower relationships as a single dimension along

a continuum, moving from very authoritative, task behaviors at one end to very democratic, relationship-oriented behaviors at the opposite end. The autocratic, democratic, laissez-faire styles deal with subordinate freedom in decision-making, not with the means by which leaders present themselves. Because the styles approach is limited to only one characteristic of leadership, the ability to describe, explain, and predict group behavior is significantly limited.

Dozens of studies, several of which are reported later, utilized this autocratic-democratic-laissez-faire typology. Many of the more recent studies replace the term "autocratic" with "authoritarian," while "democratic" is being replaced with "participative" (Stoner, 1978).

The Ohio State studies. A second typology was developed by Fleishman (1953), and is generally referred to as the Ohio State Leadership Studies. These studies, initiated by the Ohio Bureau of Business Research, are the first in a series of research trends to question whether leader behavior can be depicted on a single continuum.

Hemphill and an associate (Hemphill & Coons, 1957) developed a list of 1,800 items describing leader behavior. These items were sorted and compiled into nine hypothetical categories, which were then factor-analyzed to identify the independent dimensions of leader behavior. Factor analyses of the intercorrelations between the nine categories tended to yield two factors, and occasionally a third weak factor.

Thus, it was discovered that the items measured two different patterns of behavior, rather than nine, as originally hypothesized. These orthogonal dimensions, consideration and initiating structure are measured by two separate questionnaires.

The Leadership Opinion Questionnaire (LOQ) is administered to the leader himself and attempts to assess how leaders perceive they behave in leadership roles (Fleishman, 1957). Thus, the LOQ is considered to be a measure of leader attitude rather than actual leader behavior. The Leader Behavior Description Questionnaire (LBDQ) queries subordinates, superiors, or peers regarding how they perceive the leader's performance (Hemphill and Coons, 1957). A score on initiating structure reflects the extent to which an individual defines and structures his own role and those of his subordinates in their movement toward goal attainment. A high score on this dimension characterizes individuals who play an active role in directing group activities through planning, and trying out new ideas. In contrast, the consideration score reflects the extent to which an individual acts in a warm, supportive manner and shows trust, concern, and respect for subordinates. A high score on this dimension is indicative of a climate of good rapport and interactive communication. Conversely, a low consideration score indicates the leader is likely to be more impersonal in his or her relations with group members.

The Ohio State staff also found that leaders often have styles characterized by both task and relationship behavior. Initiating structure and consideration are not either/or leadership styles, as Lewin, Lippitt, and White (1939) suggested, but are distinct dimensions which can be plotted on two axes. These studies were the first to utilize four quadrants to depict leadership styles in terms of initiating structure and consideration.

Korman's (1966) critique of the Ohio State research on leadership is perhaps the most publicized. According to Korman, the most serious deficiency in the studies is the overreliance on "static correlational" methods. After reviewing over fifty studies which examined the relationship between the dimensions of task and relationships, he reports that the studies yielded insignificant correlations between effectiveness and leader behavior, and researchers put forth little effort to conceptualize situational variables and their possible effects. In the concluding paragraph he asserts:

The results show a predominance of low to moderate correlations, but almost all of a concurrent validity nature. There is as yet almost no evidence on the predictive validity of "Consideration" and "Initiation Structure" nor on the kinds of situational moderators which might affect such validity. (p. 360)

Hence, Korman found that the use of consideration and initiating structure has no predictive value in terms of effectiveness as situations change.



The University of Michigan Survey Research Center studies.

Arguing that a two-factor approach to leadership is too simple, Bowers and Seashore (1966) developed a four-dimensional typology of leader styles. They believe leaders are capable of varying in the following ways: Support, which is behavior that enhances subordinate's feelings about themselves, such as self-esteem; interaction facilitation, which is conduct which encourages subordinates to develop close, mutually satisfying relationships among themselves; goal emphasis, which is leader behavior that motivates group members to strive for higher performance levels, and work facilitation, which is behavior that helps members achieve their goals through scheduling, planning, coordinating, and providing materials and resources. Taylor (1971) provides support for the importance of these four dimensions.

Research on the four leadership factors, as with research on consideration and initiating structure has yielded mixed results. One possible reason for this is that neither typology takes into account the demands of the situation. Other weaknesses are also apparent. For example, the typology is vague in specifying exactly how leaders who differ on the reported four dimensions communicated the feelings or behaviors appropriate to each dimension. Also, when Bowers and Seashore (1966) attempted to integrate the four dimensions, they found "the use of a post hoc delineation of leader

behavior factors and the matching of previously established scales to reflect the factors" revealed that a more comprehensive questionnaire was needed (p. 9).

The studies identified above shifted the focus from the personality characteristics of the leader to actual leader behaviors. As will be noted at a later point, the majority of these research investigations attempted to specify actual leader behaviors, then correlated these with variables such as satisfaction or performance. Correlational studies of this type make it difficult to form conclusions about the process of leadership in an causal sense. For instance, do specific leader behaviors cause variations in group performance or effectiveness, or are these variations in performance merely associated with the different leader behaviors?

As results of the early leadership studies on leader behavior became known, researchers quickly grasped the implications of the dynamics of leadership across a wide spectrum of situations. Studies were initiated to survey leadership using a situational approach. Recent examinations of leadership research reveal that the focal question shifted from "What is the best kind of leadership?" to "What kind of leadership works best in what kind of situation?" (Michaelson, 1973, p. 226).

Characteristic of the last four typologies of leadership is the assumption that when a particular style is used in the most appropriate situation, greater leader effectiveness will

result. These typologies generally treat the leader's behavior as an independent variable which directly influences subordinates' performance levels. In other words, the trait and leader behavior orientations emphasize antecedent conditions asking, "What makes a leader?" while the leader effectiveness orientations emphasize outcomes, asking, "What difference does a leader make?" Representative typologies of the leader effectiveness orientation are reviewed and critiqued below.

Likert's Continuum Selection theory. After a thorough review of the leadership research completed at the University of Michigan's Institute for Social Research, Likert (1961 ; 1967) proposed a modified continuum selection model. This theoretical framework, entitled "System 4 Management," depicts four different management/leadership systems which may vary depending upon the degree of subordinate input into the decision-making process. According to Likert, System 1, which he initially termed "Exploitative-Authoritative" management and System 2, which is also authoritative in nature, are ineffective in that they are unable to reflect the changes continually occurring within the organizational environment. Likert's System 3 Management style is one in which the leader maintains control, but consults subordinates on most decisions. Finally, at the opposite end of the continuum, is Likert's System 4, which is the most participative. This managerial style encourages all subordinates to enter fully into the decision-making process of the organization. Likert (1967) regards System 4 (Participative) leader behavior as the most effective style in

terms of promoting an increased sense of subordinate responsibility, greater group loyalty, higher production and performance goals, and a higher motivation to produce. Although Likert's views are widely shared by both researchers and practitioners alike, there are several drawbacks. For example, Likert proposes structuring the organization as a system of over-lapping groups, with designated leaders serving linking-pin functions. Each manager is a member of his own group, plus a member of the group of managers reporting to a higher organizational sub-unit. Likert's System 4 requires this type of hierarchial superior-subordinate structure and the presence of linking-pins to mediate between the levels.

Likert (1961) points out another potential weakness in his theory. While his research reveals that subjects with participative management have the best records of performance, Likert questions the issue of cause and effect relationships between the variables. For example, is the manager's style causing the level of production, or is the level of production prompting or encouraging the style of the manager? Likert suggests that the higher-producing subordinates actually allow for more general, rather than close, supervision. Likewise, a low-producing section may force the superior to be more task-oriented.

Blake and Mouton's Managerial Grid. Incorporating the findings of the Ohio State studies, Blake and Mouton (1964) popularized the four leadership quadrants first identified by

Fleishman (1953). This Managerial Grid contrasts five leadership styles with task accomplishment and potential for interaction. In each of the following styles, the first digit represents a concern for production, while the second digit represents a concern for people. The 1,1 style posits that the leader should put forth a minimal effort to get the work done. This low concern for both production and relationships is often referred to as laissez-faire leadership (Blake and Mouton, 1964). The 1,9 quadrant depicts the leader who demonstrates maximal concern for people and little concern for the task. 5,5 leadership argues adequate performance can be obtained by balancing the requirements to be productive with the maintenance of subordinate morale; hence, this style of leadership describes a compromise between the two extremes (Blake and Mouton, 1964). The 9,1 style argues that the obtaining of maximum efficiency depends upon the leader arranging conditions in such a way that socio-emotional elements interfere to a minimal degree. The authoritarian style is depicted in the 9,1 quadrant. Finally, the 9,9 style states that productivity is directly related to the degree to which subordinates are committed to the organization's purpose. This commitment leads to interpersonal relationships which foster trust and respect. Democratic leadership is often depicted as 9,9 management (Blake and Mouton, 1964; 1978).

Blake and Mouton's Managerial Grid has several deficiencies worth noting. The grid gives little attention to such issues as the situational or environmental conditions under which each style should be utilized. For instance, a leader possessing a high concern for both people and production may not find it appropriate in all situations to display a high degree of socio-emotional support and structure.

Likewise, in defining the various styles, no concrete measures of leader-effectiveness are demonstrated. Blake and Mouton assume that people and production concerns are complementary (Gibson, Ivancevich, and Donnelly, 1979) and stress that "team orientation" should be used in all five situations. Their position that leadership training workshops should attempt to move all leaders to the 9,9 position lacks empirical support.

Also, Blake and Mouton's Managerial Grid reflects attitudinal dimensions, a leader's predispositions toward subordinates, not actual communication behavior. Behavioral assumptions cannot be drawn from an analysis of the attitudinal dimensions of the grid.

Fiedler's Contingency model. Probably the best known of the situational theories of leadership are the ones conducted at the University of Illinois by Fred Fiedler (1964, 1967). Fiedler's contingency model postulates that a group's performance is dependent upon two issues: (1) the specific leadership style, as determined by the leader's LPC score, and

(2) the style's interaction with the situational favorableness of the group being led.

Fiedler conducted a fifteen year research program which included more than thirty-five studies with over 1,500 interacting task groups. In each of these earlier studies, a leader's effectiveness was defined in terms of the group's performance. On the basis of these results, Fiedler hypothesized that leader effectiveness depended on three rather complex situational variables--leader-member relations, position power, and task structure. These variables, often termed "situational control" or "situational favorability" are defined in the following manner.

Leader-member relations are operationalized in terms of a leader's personal attraction to the group members and vice versa. This situational variable, reflecting the support and the respect of the followers, depicts the subordinates' general acceptance of their leader. This variable can be divided into "good" and "poor" classifications. The second measure of situational favorableness, task-structure, is defined as the degree of organization imposed by superiors. Task structure includes such components as decision verifiability, goal clarity, and decision specificity (Fiedler and Chemers, 1974). For instance, a highly structured task allows the leader to monitor and influence subordinates' behavior to a greater degree than if the task were unstructured. Task structure can be classified as "high" or "low." The third variable,

position power, refers to the degree of actual authority in the leadership position, or the degree to which the leader can reward, punish, or evaluate subordinates' behavior. In the contingency model, position power can be classified as either "strong" or "weak."

Of the three situational variables discussed above, Fiedler contends leader-member relations are the most important, followed by task structure and finally position power (Fiedler, 1967). By combining and weighing each of these situational aspects, a group can be classified on the situational favorableness dimension.

The situational variables discussed above interact with the leader's style, which is determined through the Least Preferred Coworker (LPC) scales. This score, assumed to be an indicator of the leader's personality, results from leaders rating their least preferred coworker on a set of sixteen, bipolar adjective scales. The leader is then classified as either a high LPC leader or a low LPC leader, depending upon whether the leader describes his LPC in relatively positive or negative terms.

The interpretation of the LPC scores has changed several times over the years since they were first utilized in Fiedler's research. For example, Fiedler's 1961 model contended that the LPC score was an index of the leader's traits or specific styles (behavioral aspects), with high LPC leaders being interpersonally oriented and low LPC leaders being more



task oriented. When support for a behavioral explanation of the hypothesized relations could not be found (Neally & Blood, 1968; Yukl, 1970; Graenfeld, Rance, and Weissenberg, 1969), Fiedler began to search for an alternative explanation to explain the relationship between LPC scores and leader behavior.

Fiedler's (1972; 1973) most recent interpretation of the LPC scores is in terms of a leader's "motive hierarchy." This hierarchy allows a leader to have both primary and secondary goals. For instance, for the high LPC leader, interpersonal relations are primary, while prominence and self-enhancement are secondary (Fiedler, 1973). On the other hand, the primary motive of the low LPC leader is task accomplishment, with good interpersonal relationships as the secondary goal. A re-analysis by Fiedler (1978) supports this interpretation (e.g., Fiedler, Meuwese, & Oonk, 1961).

In the model described above, the three aspects of situational favorableness are conceptualized as dichotomies, and form a three-dimensional, eight-celled cube, with each cube describing a different situation. The theory postulates that leaders with low LPC scores have the most productive groups when the leadership situation, in terms of "situational favorability" is either very favorable or very unfavorable (Fiedler, 1976). Likewise, leaders with high LPC scores are more effective in the intermediate range of favorableness.

Thus, Fiedler contends that group effectiveness is contingent upon how appropriately each leader's style is matched to the situational favorableness present. Fiedler also asserts that because leadership style is difficult to change, it is better to change the situational variables.

Fiedler's contingency model of leadership effectiveness has received substantial support in the last few years (Chemers & Skyzypek, 1972; Michaelsen, 1973; Rice & Chemers, 1973; Sashkin, 1972). Conversely, the severity of numerous other criticisms (McMahon, 1972; Ashour, 1973; Evans, 1970; Campbell, 1968) indicate the model should either be revised or expanded before it can be termed an adequate model of leadership effectiveness. Some of the major criticisms are as follows.

Research indicates there is still a problem with the LPC score measures. Schriesheim & Kerr (1977) indicate this score is simply a "measure in search of a meaning" (p. 26). Although Fiedler did change the interpretation of the LPC scores, as indicated earlier, many contend it is still not a reliable measure of either a leader's attitudes toward subordinates, or an adequate predictor of leader behavior. For instance, Sample & Wilson (1965), Nealy and Blood (1968), and Graham (1968) conducted research wherein the behaviors exhibited by both high and low LPC leaders were often the antithesis of the behaviors predicted by the model.

Other criticisms are aimed at the inflexibility of the model, and report that it does not allow for the incorporation

of new variables. With the absence of these intervening variables, it is impossible to explain, for example, why high LPC leaders are more effective in some situations and low LPC leaders are more effective in others (Yukl, 1981).

Campbell (1968) and Evans (1970) criticize the model's ability to consider only short-run relationships, while Ashour (1973) states that the model is not really a theory because it does not take into account any causal relationships between the leader's LPC scores and group performance. Shiflett (1973) points out the fact that Fiedler posits no explicit rationale for why specific weights were attached to each variable comprising the situational favorableness model. The model also does not explain why the three variables are combined and then treated as a single unitary continuum. Finally, the methodology of the contingency model does not permit analysis of the process of leadership, and predicts leadership effectiveness only within a specific range of a priori situational variables.

Shawchuck's Leader Style typology. Finally, a seventh typology was developed by Shawchuck (1978) who posited that leader style may be divided into four categories. Similar to Blake and Mouton (1978), he states that the four major styles differ in the degree to which they emphasize relationships

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Insert Diagram 1 about here

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and tasks. The Leadership Styles Matrix is presented in

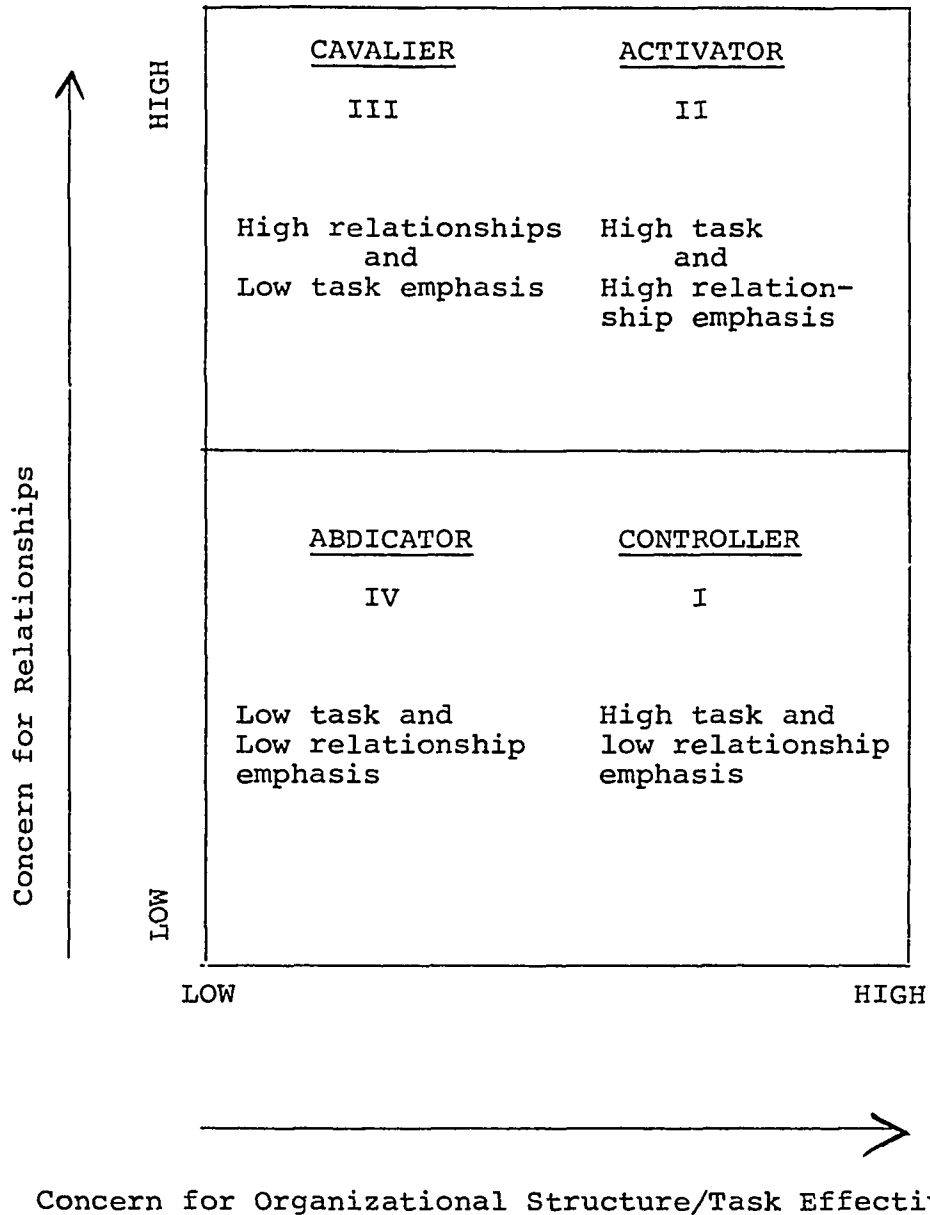


Diagram 1. For example, the controller leader places high emphasis on task effectiveness and low emphasis on relationships. This type of leader takes a rigidly structured, directional approach to task accomplishment and will allow interpersonal relationships to deteriorate if they should interfere as the group progresses toward its goal. The controller rewards and punishes, orders, regiments, and evaluates his or her subordinates. The activator leader places great emphasis on both relationships and the group task. This leader supervises the group in planning, problem-solving, and decision-making sessions, yet at the same time seeks to keep everyone involved. The activator leader is a flexible, sensitive, goal-oriented leader who actively reinforces subordinates, solidifies, and participates in the group's discussion. The cavalier leader places high emphasis on interpersonal relationships and low emphasis on the task. When necessary, this type of leader will ignore group goals in order to maintain conflict-free relationships. The cavalier leader is extremely tactful and sensitive when providing instructions or evaluations, and is flexible and permissive with all subordinates, continually seeking to maintain a pleasant work environment. Finally, the abdicator leader places low emphasis on both the task and the relationships. This leader is more of a catalyst and a facilitator, rather than a motivator and controller. The abdicator leader tends to delegate all responsibility to subordinates by withdrawing from the decision-making process.

The subordinates in this group are left alone to structure their own tasks and to provide their own socio-emotional support. The abdicator leader is a passive non-directive leader.

Incorporating Hersy and Blanchard's (1977) ideas of group maturity (discussed at a later point), Shawchuck argues that as a group progresses from an immature to a mature group, the leadership styles must also change from controller to activator to cavalier to abdicator. When the correct leadership style is matched with the appropriate group maturity level, the most favorable outcomes are likely to result. These changes from quadrant 1 to 2,3, then 4 must be gradual. Indeed, the very process of both maturity and leadership is evolutionary, not revolutionary, as both the leader and the followers acquire mutual trust and respect.

In conclusion, by emphasizing the interaction among variables, the leadership effectiveness theories have significantly increased our understanding of the process of leadership. One major negative aspect of the above theories is that although they emphasize the interactive relationships between the leader and the subordinates, the methodologies utilized are static in nature and do not account for reciprocal causation influences (McMahon, 1972).

Both the trait/leader behavior orientations and the leader effectiveness orientations have led to an increased knowledge and understanding of the leadership process. The trait approaches (Bird, 1940; Stogdill, 1948) identified

numerous personality characteristics of effective leaders; the leader behavior orientations (Lewin, Lippitt, and White, 1939; Fleishman, 1953; Bowers and Seashore, 1966) identified and measured specific leader behaviors. Finally, the leader-effectiveness typologies (Likert, 1967; Fiedler, 1967; Blake and Mouton, 1964; Shawchuck, 1978) observed the interactional effects of both the subordinates and environmental factors on the leader's behavior. Research such as this has provided guidelines for isolating characteristics of effective leadership in terms of specific leader behaviors, and situational influences. These conclusions provide both a unified and a pragmatic understanding of the leadership process, and serve as a theoretical base for the development of new research foundations. The following paragraphs report research which has varied leader style in an effort to assess specific outcomes.

#### Leader Style Research

The three dependent variables chosen for this research (satisfaction, task effectiveness, and task efficiency) are all related to the concept of group performance. A group's performance may be considered higher when a group exhibits increased satisfaction, greater effectiveness, and greater efficiency. Conversely, when all three variables are low, the group's overall performance is affected. Further, these three variables are interrelated. A higher degree of satisfaction often results from tasks which are performed effectively and efficiently. When a group performs a task ineffectively and

inefficiently, its members are likely to report a low degree of satisfaction with the group. Similarly, a group that strives for a high degree of task effectiveness is likely to be low in task efficiency, in that to perform a task carefully often requires more time, and thus a loss in efficiency. The following research reports these results.

### Leader Style and Satisfaction

A majority of empirical studies which varied style and assessed subordinate satisfaction utilized the "initiating structure-consideration" or "autocratic-democratic-laissez-faire" typologies.

Several studies found that leaders who exhibit high degrees of consideration have more satisfied subordinates (Brown and Bledsoe, 1978; Valenzi and Dessler, 1973). In addition, House, Filley, and Gujarati (1971) found that leaders who are high in both consideration and decisiveness have more satisfied subordinates. Stogdill (1974) reported "group productivity is somewhat more highly related to structure than to consideration. Member satisfaction . . . is somewhat more highly related to consideration than to structure" (pp. 395-396). Other studies found that subordinates whose leaders were high in initiating structure reported more satisfaction (Filley and House, 1969; House, Filley, and Kerr, 1971). Hunt and Liebscher (1973) discovered both initiating structure and consideration were positively related to subordinate satisfaction. Oaklander and Fleishman (1964) found initiating structure was



negatively correlated with intergroup conflict.

Some studies investigated the role other variables play in the relationship between initiating structure, consideration, and subordinate satisfaction. Studies by House (1971) and House and Dessler (1974) found a positive correlation between leader consideration and satisfaction when the structure of the task is taken into account. Further, they found a negative correlation between leaders who initiate structure and satisfaction when the structure of the task is considered. Kenis (1978) found that subordinates' need for independence and authoritarian leadership styles modified the relationship between their reported satisfaction levels and leader consideration. No conclusive results were found for initiating structure. Thus, the personalities of subordinates did have an effect on how they responded to varying leader styles. Finally, House, Filley, and Kerr (1971) discovered that the climate of the group affects the relationship between leader consideration and subordinate satisfaction.

In studies using the authoritarian-democratic-laissez-faire typology, results have generally indicated that participative or democratic styles are associated with higher levels of subordinate satisfaction. The classic studies by Lewin, Lippitt, and White (1939) and Lippitt and White (1943) found when comparing groups with autocratic and democratic leaders, the autocratic groups reported thirty times more hostility and eight times more aggression than the democratic groups. Both

the democratic and the laissez-faire leaders were more popular with their subordinates than the autocratic leaders. Rosenbaum and Rosenbaum (1971) reported that general group satisfaction was higher with groups led by democratic leaders. Similarly, Shaw (1955) found a higher rate of satisfaction in non-authoritarian groups.

Preston and Heintz (1949) found that subjects with participatory leaders were more satisfied with group rankings of presidential nominees than were subjects guided by supervisory leaders. Morse and Reimer (1956) reported higher levels of satisfaction in autonomous, self-organized groups than in ones guided by authoritarian leaders. Interestingly, Murnighan and Leung (1976) found groups which had highly involved leaders reported more satisfaction than groups with uninvolved leaders, especially when the subordinates perceived the task as being important. The following paragraphs report research in which leader style is varied and subordinate effectiveness is assessed.

#### Leader Style and Effectiveness

Several studies concluded there is a strong relationship between leader style and effectiveness. In general, groups with authoritarian leaders (Rosenbaum and Rosenbaum, 1971; Shaw, 1955; Morse and Reimer, 1956) and groups with leaders who emphasize initiating structure (Filley and House, 1969; House, Filley and Kerr, 1971) are found to be more productive and effective in task accomplishment than participative-democratic leaders who emphasize consideration aspects.

Groups with more involved leaders are found to be more productive when the task is perceived as important to the subordinates (Murnighan and Leung, 1976).

In contrast, some research indicates participative-democratic leadership yields more effective results. Lewin, Lippitt, and White (1939) found that the actual number of masks produced by groups of ten-year old boys did not differ when leader styles were varied, but the quality of the work was superior in the democratic groups. Preston and Heintz (1949) reported groups which were led by participatory leaders viewed the task as more effective than did groups which were led by supervisory leaders.

Finally, ways the subordinates attained the leadership role was a factor considered by Walker (1977). He posited that groups with selected leaders were more effective than groups with arbitrarily appointed leaders. These results are consistent with those found by Goldman and Fraas (1965) who reported that groups with merit-appointed or member-selected leaders were more effective than groups with assigned or arbitrarily appointed leaders. The following section details the studies which vary leader style and report subordinate efficiency.

#### Leader Style and Subordinate Efficiency

Two studies have been conducted which assessed the efficiency of a group, given varying leader styles. The results are contradictory. Preston and Heintz (1949) found that

subjects who worked under participatory leaders viewed the task as more efficient than those who worked with supervisory leaders. Conversely, Shaw (1955) reported that groups with authoritarian leaders required fewer messages for solving their problems, made fewer errors, and also took less time to complete the specified task.

The following section presents a justification and a rationale for the second independent variable, group maturity.

#### Leader Style Situational Requirements

Group maturity, a situational requirement, is not a new concept in small group literature. As early as 1957, Chris Argyris, working from the human relations school of organizational behavior, developed a maturity-immaturity continuum.

The concept of group maturity is deeply rooted in Argyris' theory about individuals in organizations. He emphasized the nature of interpersonal relationships in complex organizations. His work, Personality and Organization: The Conflict Between the System and the Individual (1957) stresses that the strategies an individual employs to achieve success in hierarchically structured organizations directly conflicts with the individual's needs. This tends to inhibit individual growth and effectiveness. Further, Argyris argues that success in hierarchical organizations depends upon the ability of an individual to divorce one's self from all personal goals or feelings and to assimilate these feelings into the organization's goals and philosophies. The assimilation process can occur in six

ways: (1) the requirement of rational behavior which necessitates that a person ignore personal feelings; (2) specialization requirements, which preclude the individual from utilizing a full range of abilities; (3) the means by which individuals cope with problems and stress from organizations (such as absenteeism, turnover, and daydreaming) keeps the person from being productive and growing; (4) the power associated with certain organizational positions relegates the individual to subordinate, dependent, and passive positions; (5) self-responsibility is taken away from the individual due to subordination, and (6) organizational control requires the individual's work be evaluated by others in the organization.

In Argyris' words, the relationship between interpersonal relationships and typical organizations is as follows:

- (1) The relevant human relationships are those related to achieving the organizational objective.
- (2) Human relations' effectiveness increases as behavior is rational, logical, and clearly communicated. Personal attitudes, feelings, and values tend to decrease effectiveness.
- (3) Human relations are most effectively influenced through direction, coercions, and control as well as rewards and penalties that serve to emphasize the rational behavior and getting the job done (1962, p. 43).

In summary, Argyris' position declares traditional organizational strategies which emphasize productivity inhibit individual development. In turn, the inhibition of individual growth makes the individual assimilate organizational assumptions and philosophies.

Within this framework, Argyris discusses the notion of individual maturity, which life-cycle theorists (Hersey and Blanchard, 1977) have adapted and applied to small groups. Argyris believes that concepts present in hierarchical organizations frequently lead to assumptions about human nature that are incompatible with the proper development of maturity. An incongruity exists between what a mature personality needs and what an organization requires. Argyris believes that individuals in organizations are kept from obtaining maturity because of the six reasons listed above. Because individuals are given limited control over their work environment, they are encouraged to be passive, dependent, and subordinate. The result is immature behavior by subordinates.

Argyris argues that seven changes take place in an individual as one progresses from immaturity to maturity (see Table 1). These are as follows: (1) the individual's passive

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Insert Table 1 about here

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state becomes one of increasing activity; (2) a state of dependency upon others moves to a state of relative independence; (3) one's behavior progresses from a limited repertoire

Table 1

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<u>Argyris' Immaturity--Maturity Continuum</u>	
Immaturity	Maturity
Passive	Active
Dependence	Independence
Behave in a few ways	Capable of behaving in many ways
Erratic, shallow interests	Deeper and stronger interests
Short time perspective	Long time perspective (Past and Future)
Subordinate position	Equal or superordinate position
Lack of awareness of self	Awareness and control over self

---

to a capability of performing many behaviors; (4) one's interests move from a shallow, erratic, and casual state to a deeper, stronger state; (5) one's time perspective moves from an exclusive emphasis on the present to an emphasis which includes both the past and the future; (6) a state of general subordination turns into a state of equality with others, and (7) a general lack of self-awareness becomes a more advanced state of self-awareness and control.

While the majority of the previously mentioned typologies imply a "best" style of leadership, Hersey and Blanchard are

quick to point out that leadership is not a static phenomenon--there is no single style which is universally successful. The Life Cycle Theory which they propose is a component of the general contingency approaches to leader-subordinate relationships (Gibson, Ivancevich, and Donnelly, 1979). These approaches emphasize that effective leader patterns depend upon the situational match between the individual leader and the leader's group. Life Cycle Theory suggests leader behavior must change as subordinates mature. Diagram 2 indicates four possible groups which differ in degrees of emphasis upon tasks

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Insert Diagram 2 about here

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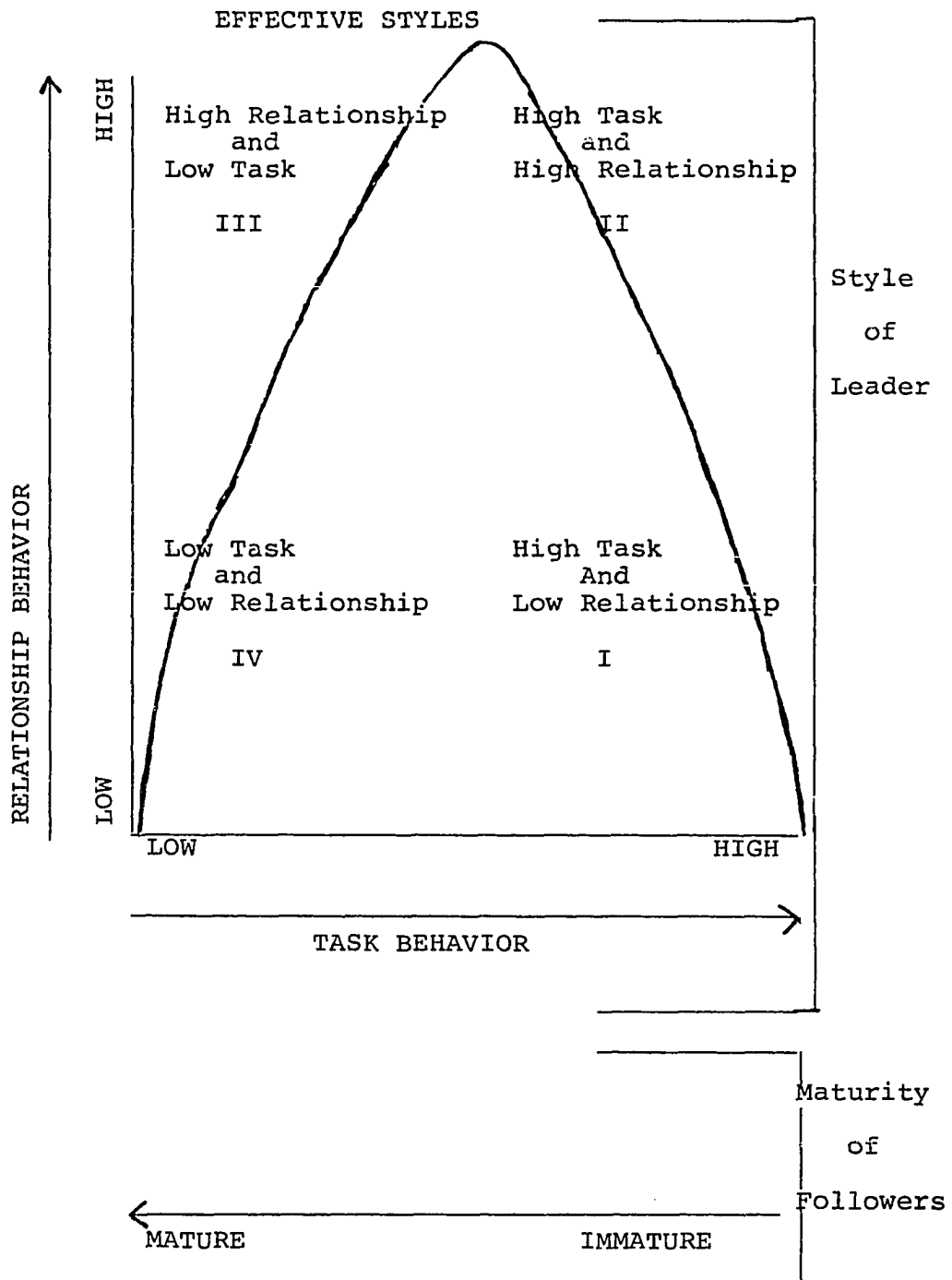
and relationships. The reader should note that Diagram 2 illustrates two different phenomena. The most appropriate leadership style is represented by the parabolic line in the four quadrants, while the maturity level of the group is depicted on a continuum ranging from immaturity to maturity (Hersey and Blanchard, p. 169). The theory is concerned with two broad categories of leadership:

**TASK BEHAVIOR:** The extent to which leaders are likely to organize and define the roles of members of their group (followers); to explain what activities each is to do and when, where, and how tasks are to be accomplished; characterized by endeavoring to establish well-defined patterns of organization, channels of communication, and ways of getting jobs accomplished.



Diagram 2

Maturity and Life Cycle Theory



RELATIONSHIP BEHAVIOR: The extent to which leaders are likely to maintain personal relationships between themselves and members of their group (followers) by opening up channels of communication, providing socio-emotional support, "psychological strokes," and facilitating behavior. (Hersey and Blanchard, 1977, p. 104)

In general, Diagram 2 illustrates that as groups' maturity increases, leaders need to provide less emphasis on task structure and less emphasis on socio-emotional relationships. As one moves up the curve in Diagram 2 (from right to left), the required leadership style for each setting changes. A "best-fit" for groups of below average maturity (quadrant I) is a leader who emphasizes the task and de-emphasizes maintenance of relationships; as the group enters an average state of maturity (quadrant II) leaders should place equal emphasis upon the tasks and the relationships; as the group continues to mature (quadrant III) the leader should emphasize relationships and de-emphasize the task, and finally, for groups of above average maturity (quadrant IV), the most appropriate leadership style is one that places low emphasis on both the tasks and the relationships. This is a positive indication of a leader's trust and confidence in the subordinates (Hersey and Blanchard, 1977). Thus, Life Cycle Theory is based on a curvilinear relationship between the tasks, the relationships, and the maturity levels. The emphasis in this theory is on

the followers, the "most crucial factor in any leadership event" (Sanford, 1950, p. 3). Followers must be considered, for they make the decision whether to accept or reject the leader; but more importantly, they determine what personal power he or she possesses. In the Life Cycle Theory, thus, leaders are not observed in isolation.

For years, numerous researchers argued that a leader can effectively supervise only a limited number of subordinates. As Koontz and O'Donnell (1968) state:

In every organization it must be decided how many subordinates a superior can manage. Students of management have found that this number is usually four to eight subordinates at the upper levels of the organization and eight to fifteen or more at the lower levels. (p. 37)

Life Cycle Theory takes an opposite stance on this issue by stating that the more mature/independent the group is, the less structure a leader will be required to supply, and therefore the more subordinates a leader will be able to supervise. This does not mean subordinates are lacking in control or direction, but that they control themselves.

In summary, life cycle theorists have applied Argyris' individual immaturity-maturity continuum to the group setting. The concept of group maturity, then, refers to a system's state which reflects how the members of a group have individually moved from dependence upon a leader to a state of

independence from the leader. The more progression group members make, the more mature that group becomes. Because a

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Insert Table 2 about here

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group's success is determined by the interaction of a leader's style with the maturity of the subordinates, any one of the four styles may be effective or ineffective, depending on the environmental constraints. There is no single ideal leader-behavior style. Table 2 presents how the basic leader behavior styles may be seen by others when they are effective and ineffective.

Group maturity as a control variable allows us to study the processes within the small group. Maturity itself focuses upon the group as a collectivity and not upon the individuals within the group. This is a direct attempt to rectify the criticisms offered by Cragan and Wright (1980) and Bormann (1980), which called for more process-oriented variables.

Of the several style typologies reviewed previously in this chapter, the four styles developed by Shawchuck (1978) are the ones utilized in this study. Applying Shawchuck's typology to Hersey and Blanchard's (1977) maturity levels, we would expect that as the group progresses in its level of maturity, the leadership style should also change from controller to activator to cavalier to abdicator. For example, this writer believes any match between a mature group and a controller leader will likely result in dysfunctional outcomes.

Table 2

Effective and Ineffective Leadership Styles

<u>BASIC STYLES</u>	<u>EFFECTIVE</u>	<u>INEFFECTIVE</u>
High task and low relationship behavior (Controller)	Seen as having well-developed methods for accomplishing goals that are helpful to followers.	Seen as imposing methods on others; sometimes seen as unpleasant and interested only in short-run output.
High task and high relationship behavior (Activator)	Seen as satisfying the needs of the group for setting goals and organizing work, but also for providing high levels of socio-emotional support.	Seen as initiating more structure than is needed by the group and often appears not to be genuine in interpersonal relationships.
High relationship and low task behavior (Cavalier)	Seen as having implicit trust in people and as being primarily concerned with facilitating their goal accomplishment.	Seen as primarily interested in harmony; sometimes seen as unwilling to accomplish a task if it risks disrupting a relationship or losing "good person" image.
Low relationship and low task behavior (Abdicator)	Seen as appropriately delegating to subordinates decisions about how the work should be done and providing little socio-emotional support where little is needed by the group.	Seen as providing little structure or socio-emotional support when needed by members of the group.

(Hersey and Blanchard, 1982, p 99)

This typology was selected for several reasons. First, the styles are defined explicitly through exact communication behaviors. What a leader says and how a leader presents him or herself is the crucial differentiating factor among the four styles. Second, little or no empirical work exists which tests whether these styles are different from one another, nor assesses any outcomes which may result from a leader who employs them. Third, the other typologies have weaknesses or irrelevancies which make them unsuited for these analyses.

It is important to know whether Shawchuck's styles, when matched with various levels of group maturity, do in fact make a significant difference in performance outcomes. The communication behaviors leaders display in interacting with their subordinates are of primary interest here. If communicating in certain ways with a group of a particular maturity level is shown to result in differential outcomes, then care should be taken by leaders to adapt their own styles to that level. To illustrate further, if by adapting a leader's style to a group's maturity level is found to result in better performance on a task, a less time-consuming effort, and higher levels of satisfaction, then leaders should make every effort to adjust their communication behavior. Indeed, such a finding has important implications for leader-training programs. As Haney (1967) has noted:

The managerial practice, therefore, should be geared to the subordinate's current level of maturity

with the overall goal of helping him to develop, to require progressively less external control, and to gain more and more self-control. And why would a man want this? Because under these conditions he achieves satisfaction on the job at levels, primarily the ego and self-fulfillment levels, at which he is most motivatable. (p. 20)

In summary, only the Shawchuck leader style typology is based on communication-relevant behaviors. These behaviors, as reviewed previously, are appropriate to one and only one style. As such, they should be easily differentiated from one another, where various outcomes from each style may be measured and comparisons made between them.

### Summary

Previous literature has demonstrated that variations in leadership styles produce differential results on a group's satisfaction, effectiveness, and efficiency levels. The impact a group's maturity level has upon these variables is still unclear. More importantly, however, the impact that the "fit" between a leader's style and the group's maturity level has upon subordinate satisfaction, effectiveness, and efficiency has never been investigated. As the leader's style is more accurately adapted to the group's maturity level, a "group climate" is produced which allows for optimal group performance. The correct fit between leader style and group maturity is essential for a group to achieve high performance

levels. A group's satisfaction, task effectiveness, and task efficiency can only be at their highest levels if this "fit" is correctly achieved. Any leader style adaptation to a group's maturity level which is short of a correct match will yield less than optimal results.

### Hypotheses

Three general categories of hypotheses are advanced in this research:

1. Levels of Subordinate Satisfaction

- 1a. For groups with activator leaders, satisfaction will be higher for immature groups.
- 1b. For groups with cavalier leaders, satisfaction will be higher for mature groups.
- 1c. For groups with controller leaders, satisfaction will be higher for immature groups.
- 1d. For groups with abdicator leaders, satisfaction will be higher for mature groups.

2. Levels of Task Effectiveness

- 2a. Immature groups with activator leaders will make fewer errors than will immature groups with abdicator leaders.
- 2b. Immature groups with controller leaders will make fewer errors than will immature groups with cavalier leaders.
- 2c. Immature groups with activator leaders will make fewer errors than will immature groups with cavalier leaders.



- 2d. Immature groups with controller leaders will make fewer errors than will immature groups with abdicator leaders.
- 2e. Mature groups with abdicator leaders will make fewer errors than will mature groups with activator leaders.
- 2f. Mature groups with cavalier leaders will make fewer errors than will mature groups with controller leaders.
- 2g. Mature groups with abdicator leaders will make fewer errors than will mature groups with controller leaders.
- 2h. Mature groups with cavalier leaders will make fewer errors than mature groups with activator leaders.
- 2i. There will be a significant difference in the number of errors made between mature groups with abdicator leaders and immature groups with activator leaders.
- 2j. There will be a significant difference in the number of errors made between mature groups with cavalier leaders and immature groups with controller leaders.
- 2k. There will be a significant difference in the number of errors made between mature groups with abdicator leaders and immature groups with controller leaders.

- 2l. There will be a significant difference in the number of errors made between mature groups with cavalier leaders and immature groups with activator leaders.

3. Levels of Task Efficiency

- 3a. Immature groups with activator leaders will take less time to complete the task than will immature groups with abdicator leaders.
- 3b. Immature groups with controller leaders will take less time to complete the task than will immature groups with cavalier leaders.
- 3c. Immature groups with activator leaders will take less time to complete the task than will immature groups with cavalier leaders.
- 3d. Immature groups with controller leaders will take less time to complete the task than will immature groups with abdicator leaders.
- 3e. Mature groups with abdicator leaders will take less time to complete the task than will mature groups with activator leaders.
- 3f. Mature groups with cavalier leaders will take less time to complete the task than will mature groups with controller leaders.
- 3g. Mature groups with abdicator leaders will take less time to complete the task than will mature groups with controller leaders.

- 3h. Mature groups with cavalier leaders will take less time to complete the task than will mature groups with activator leaders.
- 3i. There will be a significant difference in the amount of time taken to complete the task between mature groups with abdicator leaders and immature groups with activator leaders.
- 3j. There will be a significant difference in the amount of time taken to complete the task between mature groups with cavalier leaders and immature groups with controller leaders.
- 3k. There will be a significant difference in the amount of time taken to complete the task between mature groups with abdicator leaders and immature groups with controller leaders.
- 3l. There will be a significant difference in the amount of time taken to complete the task between mature groups with cavalier leaders and immature groups with activator leaders.

## Chapter II

### METHOD

This chapter provides details concerning the subjects for the study, the procedures by which the study is conducted, the independent and dependent variables and their manipulations for the study, and data analysis. Each of these areas is detailed in turn.

#### Subjects

Each group ( $N = 56$ ) was comprised of four to seven members each from the Division of Management and Department of Communication at the University of Oklahoma. Subjects for this study were randomly assigned to one of 56 groups. Data from these subjects were gathered during a regular class day in the early part of the Spring semester, 1982. Some of the classes in which the data were gathered met for 75 minutes, while others met for three hours. The experimenter remained the same for all sessions in order to control for Type G error (Lindquist, 1953). The generalizability of this study was limited by the fact that all subjects' participation was strictly voluntary and was contingent upon the consent of their instructor to have the project administered during a class session. Such limitations were required as part of the

University's regulations regarding use of human subjects.

### Procedures

Twenty-eight established and twenty-eight zero-history groups provided the data for this study. Established groups were those which had completed a minimum of five major projects as a unit, while zero-history groups were assembled for the purpose of the study. Leaders in both the established and zero-history groups were randomly selected by the experimenter. Because the experimenter desired that each leader in the mature groups portray the particular leadership style closest to his or her actual personality, a questionnaire requiring that each group member rate each other member according to Shawchuck's (1978) styles (see Appendix A) was administered two weeks prior to the data collection. Hence, the leader for each of the mature groups, as selected by the experimenter, was the individual the majority of the groups members rated as representing one particular leadership style.

The task which each group performed was the "Subarctic Survival Simulation" developed by Kast and Rosenzweig (1978, see Appendix B). This simulation is based on the story of a plane which has crash-landed in subarctic conditions. Fifteen items have been salvaged from the wreckage, and the participants must decide the relative importance or necessity of each item. This task was selected because, unlike others, expert rankings for the items are available, thus providing rationale and validity for each items' ranking. In addition,

the simulation may be used for pedagogical purposes, permitting simultaneous value to the classroom objectives while gathering data for this research.

The task was in three parts. First, participants in each group rank-ordered the items individually without consulting other group members. Second, group members jointly rank-ordered the items until a consensus was reached. There was no time limit imposed upon the groups to complete either of the above tasks. Finally, each group's rankings were compared with the "expert" rankings, as established by four members of the Search and Rescue Unit of the State of Washington (see Appendix C). The more a group deviated from the experts' rankings in absolute values, the more ineffective the group was considered in solving the problem.

In each data-gathering session, the experimenter began by briefly introducing the nature of the task to be performed. The experimenter then divided the class into groups of four to seven members, appointed the leader of each group, then asked the leaders to leave the room. The experimenter retired with the leaders, at which time she presented each leader with a copy of the standardized leader instructions and the leader role style they would enact during the exercise (see Appendix D for the instructions and see Appendix E for the roles). The roles which the leaders were to portray were randomly assigned to each immature group, while the pre-determined roles were assigned to the mature groups (see page 52).

When the group leaders and the experimenter returned to the room, all participants were told to begin their individual

rankings of the items (see Appendix B).

In order to create sense of competitiveness among the immature groups, the experimenter revealed that the best group, the group making the fewest number of errors on the simulation, would have first choice in selecting the day of their next major speaking assignment.

Each group was timed from the point at which they started the group rankings until they reached joint consensus rankings. The leader, who was responsible for keeping the group's time, reported the time to the experimenter once the group had completed its rankings.

When all groups had completed the task, the experimenter gave each group member a number of instruments to complete. Both the leaders and the subordinates completed four questionnaires: (1) Demographic information (see Appendix F), (2) Perceptions of the group's maturity (see Appendix G), (3) Subordinate satisfaction (see Appendix H), and (4) Post-hoc questionnaires (see Appendix I, J, K). All group members completed the above questionnaires. However, the leaders' answers on the subordinate satisfaction questionnaire (see Appendix H) were not analyzed, and leaders were not given two of the questionnaires that the subordinates completed (see Appendix I, J). Leaders responded to the Leader Style Confidence Questionnaire (Appendix K).

Once the battery of instruments was completed, the experimenter revealed the "expert" rankings (see Appendix C). On

the form provided for the purpose (see Appendix B), group members recorded the expert rankings and determined the absolute difference between those rankings and their group's rankings.

The experimenter then gathered all of the roles and instruments used in the session. At the discretion of the instructor in whose class the data was gathered, the experimenter then provided the experts' rationale for the ranking of each item. The experimenter also gave a brief lecture on the merits of group versus individual decision-making. In addition, the exercise may be referred to by the instructor throughout the semester as an example regarding the topics leadership, decision-making, game theory, and consensus in small groups.

### Variables

Figure 1 provides a pictorial synopsis of the variables to be analyzed in this study. As can be seen, the chart depicts the levels of the two independent variables and the three dependent variables.

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Insert Figure 1 about here

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### Independent Variables for Hypothesis Testing

Leader Style. Prototypes for specific roles for each of the four leader styles (abdicator, controller, cavalier, activator) developed by Shawchuck (1978) were written in accordance with each of the characteristics discussed on pages 27-29. Each of these roles is operationally defined in Appendix E.



## GROUP MATURITY LEVEL\*\*

		Mature Groups	Immature Groups
LEADER STYLE **	Controller Leaders	Cell 1 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *	Cell 2 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *
	Activator Leaders	Cell 3 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *	Cell 4 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *
	Cavalier Leaders	Cell 5 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *	Cell 6 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *
	Abdicator Leaders	Cell 7 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *	Cell 8 N = 7 groups <u>Dependent Var.:</u> Satisfaction * Effectiveness * Efficiency *

Figure 1. Summary of Variables.

\*\* These two measures represent the two independent variables, as represented in the hypotheses.

\* These three measures represent the three dependent variables, as represented in the hypotheses.

Maturity Level. The maturity variable in Hersey and Blanchard's (1977) Life Cycle Theory has never been empirically tested, and is difficult to assess as to its reliability and validity. Reviews of the group maturity concept utilized in other research also have failed to reveal the existence of any rigorous measurement techniques.

One assumption about the maturity of a group is that groups who are established and have worked together longer are likely to be more mature than groups which have a zero or minimal history level. Established groups should be significantly different from zero-history groups on a number of dimensions which define the maturity or immaturity of a group. An instrument was developed to operationalize Hersey and Blanchard's construct, and was utilized in a pilot study to determine the internal consistency and discriminating ability of the scale items which may constitute these instruments (see Appendix G). In this pilot study, the group maturity scales were assessed as to their ability to discriminate between the independently assessed established and unestablished groups. A two-group discriminant analysis was utilized to determine which scale items best discriminated between mature and immature groups.

Ten bi-polar, seven-point scales believed on a *prima facie* level to measure the maturity levels of groups (see Appendix G) were developed and administered during the Fall, 1981 semester to 80 subjects in basic Communication courses

and 79 subjects in a senior-level Management course during a regular class day. The polarity of the odd numbered scales was reversed in order to control for right or left scoring bias of respondents.

Data for the multiple discriminant analysis was gathered in a pilot study, utilizing the ten maturity scales as predictor variables in order to assess their ability to differentiate between established (mature) and unestablished (immature) groups. Multiple discriminant analysis is a technique for determining whether nominal categories (in this case, the two levels of group maturity) are significantly different, and which predictor variables (in this case, the ten maturity scales) contributed the most to the difference. Multiple discriminant analysis utilizes the scales as predictors for assigning subjects into one of the two groups. A comparison may then be made between the number of subjects correctly classified and the number who are incorrectly classified in order to assess the power of the predictors. A stepwise technique was utilized, using Rao's V criterion as a method of assessing which scale items significantly contributed to distinguishing between mature and immature subjects.

The results indicated all ten items were significant ( $p < .001$ ) predictors (see Table 3). The items correctly

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Insert Table 3 about here

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placed 87.5 percent of the immature, unestablished subjects (70 out of 80) and 91.1 percent of the established, mature subjects (72 out of 79). Overall, 89.3 percent of all subjects were correctly placed by the ten maturity items. Further, all ten scales were identified by the multiple discriminant analysis as significant discriminators between the two groups of subjects. Each of these items was a significant discriminating scale at the  $p < .001$  level (see Table 3). The results showed a canonical correlation of .75, (Wilks' Lambda = .44,  $\chi^2 = 125.58$ ;  $df = 10$ ,  $p < .0001$ ).

It was important to determine whether the ten group maturity items were valid discriminators between mature and immature groups as a way of assessing whether it was reasonable to proceed with the proposal. In addition, the stability of the discriminating power of the instrument was determined through the pilot research.

To measure the reliability of the instrument, a Cronbach's Alpha for internal consistency, a Spearman-Brown split-half coefficient, and a Spearman-Brown prophecy coefficient were obtained. An alpha of .83, a split-half coefficient of .77, and a prophecy coefficient, which represented the reliability of the scales had the number of items been doubled, of .87, were obtained.

#### Dependent Variables for Hypothesis Testing

Subordinate satisfaction. Group members' satisfaction was operationalized here through seven scales which were

Table 3  
Discriminating Scales

<u>Item</u>	<u>Discriminant Function</u>	<u>F*</u>
	<u>Coefficient</u>	
1	.089	42.6
2	.223	9.2
3	.040	28.3
4	-.015	23.8
5	-.055	44.8
6	.259	57.7
7	.281	45.5
8	.239	28.5
9	.246	71.4
10	.541	120.7

\*  $p < .001$

isolated from the group satisfaction instrument established by Hackman and Vidmar (1970) (see Appendix H). These writers developed a twenty-item instrument, but did not report any measure of reliability and validity. Hecht (1978) provided a critique of the instrument, noting that its utility is limited until such reliability and validity information is available.

The seven-item scale utilized in this study was composed of only those scales which dealt with the satisfaction subordinates reported about the group's performance on the task,

the method by which the task was performed, and the subjects' participation in the task.

In examining the literature concerned with satisfaction, only the Hackman and Vidman (1970) instrument specifically addressed the small group setting. The writer reviewed each scale and noted that the instrument included several items that were irrelevant to the present study. For example, some scales ("There was a definite leader in the group") tapped actual recognition of the leader, while other scales ("This group was too large for best results on the task it was trying to do") measured subordinates' perceptions of the group size. The writer isolated seven of the twenty scales which seemed on a *prima facie* level to represent group member satisfaction (see Appendix H), and tested them for their reliability.

During a normal class day, in the Fall, 1981 semester, 74 subjects enrolled in basic communication courses were placed in small groups to decide the format of one-tenth of the final course grade. Following the meeting, group members completed the seven satisfaction items regarding how they felt about the previous meeting. The items were seven-point semantic differential-type scales (see Appendix H).

To measure the reliability of the satisfaction instrument, a Cronbach's Alpha for internal consistency and a Spearman-Brown split-half coefficient were obtained. The scales yielded high internal consistency with a Cronbach's

Alpha of .73 and a Spearman-Brown of .64. In the study, each subjects' satisfaction score was averaged with all other members' satisfaction scores within the group.

Effectiveness. Group effectiveness was operationally defined as the difference between the group's rankings of each survival item and the experts' rankings. This difference was the group error score. It is important to remember that the error scores represented absolute values--the sign of the error was ignored. To illustrate further, if a "snow suit" was ranked by a group as a "10," and the expert ranking was a "5," the group was five error points off. Similarly, if a "fifth of rum" was ranked "2" by a group, and the expert ranking was a "12," the group was ten error points off. As the group error score increased, the group was less effective in solving the task.

Efficiency. Group efficiency was operationally defined as the amount of time a group took to complete the task. The leader of each group was assigned the duty of timing the interaction. Timing began once the group started its rankings and ended when the group achieved consensus. As the amount of time a group took to complete the task increased, the group was considered less efficient.

#### Manipulation Checks

Three manipulation checks are reported here. These checks are as follows: (1) the portrayal of each leader role, (2) the maturity of the group, and (3) a population check,

conducted in a pilot study. The first two manipulation checks are important in order to assess whether the independent variables took effect in the study, such that the results from the analyses may be directly attributed to differences in the independent variables. The third check is important because of the possibility that communication and management subjects may be initially different in their maturity level.

#### Leader Role

Once all of the instruments for the study were completed, each subordinate received a "check" to determine whether their group's leader portrayed his or her role style accurately (see Appendix J). For this check, members were presented with all four styles (abdicator, activator, controller, cavalier) and were asked to indicate which of the roles they believed their leader portrayed. A comparison was then made between the subordinates' perceptions of their role with the role which was actually assigned to the leader.

A percentage representing the number of correct perceptions for each group was obtained. The average percentages for correct and incorrect perceptions for each of the leader roles are reported. Further, a one-way ANOVA was conducted on each of the three dependent variables, utilizing the four leadership styles as independent variables, in order to test the extent to which each of the styles took effect. A Scheffé test was used to determine which style contributed the most to the difference.



A pilot study conducted in the Fall, 1981 semester, found that all four leader styles were portrayed accurately. However, the lowest obtained percentage for correct portrayal was the activator style, which requires a high emphasis on both the task and interpersonal relationships. This style may be the most difficult for a leader to portray accurately. In this study, a separate assessment of each leader style was made to determine which type of leader was least accurately portrayed, as perceived by the subjects.

#### Maturity Check

One of the instruments group members completed during the study was comprised of ten scales which measured the level of maturity for the group (see Appendix G). The reliability and validity was reported earlier (see page 59). This instrument was used again as a check in this study in order to determine whether the established groups were significantly more mature than the zero-history groups. To test this assumption, a multiple discriminant analysis was conducted, utilizing the ten scales as predictor variables and maturity-immaturity as classification criteria.

#### Population Check

There is a recognized possibility that the subjects in this study represented two distinct populations. Management subjects may be initially more psychologically mature than basic-course communication subjects in that they are older,

are at an advanced level of education, or are seeking a different type of degree. The important factor, however, is that immature groups, even though they are composed of management subjects, are not significantly more mature than the immature groups composed of communication subjects. This idea is grounded on the theoretically based belief that maturity level is a situationally derived concept dependent upon the amount of time subjects have worked together in a small group. Similarly, mature groups of management students should not be any different in their initial maturity level than mature communication subjects. A pilot study was conducted to assess whether communication and management subjects differed in maturity levels. This population check was tested through the Kolmogorov-Smirnov two-sample test which is a test for the independence of two samples (Siegel, 1956). In addition, a 2 x 2 ANOVA was conducted to assess whether the mean point-estimates demonstrated that the scale measuring maturity was a valid indicator of zero-history versus mature groups, while the point estimates for management and communication subjects were not significantly different from each other.

Based on the pilot study, the Kolmogorov-Smirnov two-sample test revealed the communication and management subjects were not significantly different on levels of group maturity ( $K-S, Z = 0.703, p > .05$ ). The 2 x 2 ANOVA revealed the main effect for maturity levels was significant ( $F = 157.06,$

$p < .0001$ ), while the main effect for departments (communication and management) was not significant ( $F = 0.46$ ,  $p > .05$ ). No significant interaction was found ( $F = 1.05$ ,  $p > .05$ ). Hence, these results indicated it is reasonable to assume that subjects from management and communication departments are from the same population. At the same time, the maturity scale is a valid indicator in that it correctly distinguished zero-history groups from groups having a longer history (see Table 3, p. 60).

### Data Analysis

#### Variable Analysis

Figure 1 (page 56) provided a summary of the variables in the study. The two independent variables in this study are group maturity with two levels (mature, immature) and leader style with four levels (abdicator, activator, cavalier, controller). The three dependent variables are subordinate satisfaction, effectiveness, and efficiency.

In order to obtain the best estimate of the population variance for these analyses, a 2 X 4 ANOVA was performed on each dependent variable. This test yielded the proper error term for each t-test. The ANOVA included the two levels of group maturity and the four levels of leader style. For satisfaction, the  $MSS_w$  was 47.16; for effectiveness, 98.19; and for efficiency, 34.40.

#### Hypothesis Testing

The present section details the statistical tests used for each of the research hypotheses. A rationale for each

test is also provided. Refer to Figure 1 for a clear understanding of these hypotheses (see page 56).

Hypothesis One. The first general group of hypotheses in this study was concerned with levels of subordinate satisfaction. Each hypothesis about subordinate satisfaction was examined by a one-tailed t-test comparing mature and immature groups. Each test was one-tailed because the hypotheses were directional and predicted that one maturity group would be significantly higher or lower than another.

Hypothesis 1a compared all groups with activator leaders (cells 3 and 4) and predicted that satisfaction would be higher for the immature groups (cell 4). Hypothesis 1b did the same, selecting cavalier leaders (cells 5 and 6) and predicted higher satisfaction for mature groups (cell 5). Hypothesis 1c compared groups with controller leaders (cells 1 and 2) and predicted higher satisfaction for immature groups (cell 2). Finally, hypothesis 1d compared groups with abdicator leaders (cells 7 and 8) and predicted higher satisfaction for mature groups (cell 7). (The reader should note that hypotheses 1a through 1d predicted a favorable outcome when the leader's style was correctly matched to the group's maturity level.)

Hypothesis Two. It is important to recall that each group was required to complete the "Subarctic Survival" simulation (Kast and Rosenzweig, 1978). This exercise pitted a group's judgment of rank-ordered items necessary for survival

in subarctic conditions against those of an expert. Any discrepancy between the two lists represented an error. As the number of errors approached zero, the group was considered more effective.

The second general category of hypotheses claimed that levels of task effectiveness would be significantly different between mature and immature groups, depending upon the leader style. Twelve hypotheses were identified. Hypotheses 2a through 2h were tested through one-tailed t-tests because the direction of the hypotheses was specified. Hypotheses 2i through 2l utilized the two-tailed t-test.

In hypotheses 2a through 2d, only subjects in immature groups were selected. In hypothesis 2a, groups with activator leaders (cell 4) were selected and were predicted to be more effective than groups with abdicator leaders (cell 8). Hypothesis 2b selected groups with controller leaders (cell 2) and predicted that task effectiveness would be better than in groups with cavalier leaders (cell 6). In hypothesis 2c, activator leader-groups (cell 4) were predicted to be more effective than groups led by cavalier leaders (cell 6). Finally, hypothesis 2d predicted that groups led by controllers (cell 2) would be more effective than groups led by abdicators (cell 8).

Hypotheses 2e through 2h examined mature groups. Hypothesis 2e suggested that abdicator-led groups (cell 7) would be more effective than groups led by activators (cell 3).

In hypothesis 2f, groups with cavalier leaders (cell 5) were selected and their task effectiveness was predicted to be superior to those groups led by controller leaders (cell 1). Hypothesis 2g took groups led by abdicators (cell 7) and suggested that effectiveness would be greater than that found in groups led by controllers (cell 1). Finally, hypothesis 2h selected groups with cavalier leaders (cell 5) and predicted greater effectiveness than would be found in groups led by activators (cell 3).

Hypotheses 2i through 2l examined mature versus immature groups. In all cases, the hypotheses suggested that the mature groups would be more effective. In hypothesis 2i, groups with abdicator leaders (cell 7) were predicted to be more effective than groups with activator leaders (cell 4). Hypothesis 2j took groups with cavalier leaders (cell 5) and posited that effectiveness would be greater than in groups with controller leaders (cell 2). Hypothesis 2k suggested that abdicator-led groups (cell 7) would be more effective than controller-led groups (cell 2). Finally, groups led by cavaliers (cell 5) were predicted in hypothesis 2l to be more effective than groups led by activator leaders (cell 4).

Hypothesis Three. The third general set of hypotheses stated that levels of task efficiency would be significantly different between mature and immature groups. Task efficiency refers to the amount of time the group required to complete the task. As the amount of time decreased, the group was

considered to be more efficient.

The first eight hypotheses (3a through 3h) were tested through one-tailed t-tests. Hypotheses 3i through 3l utilized the two-tailed t-test.

In hypotheses 3a through 3d, only subjects in immature groups were selected. In hypothesis 3a, groups with activator leaders (cell 4) were selected and were predicted to be more efficient than groups with abdicator leaders (cell 8). Hypothesis 3b selected groups with controller leaders (cell 2) and predicted that task efficiency would be better than groups with cavalier leaders (cell 6). In hypothesis 3c, activator leader-groups (cell 4) were predicted to be more efficient than groups led by cavalier leaders (cell 6). Finally, hypothesis 3d predicted that groups led by controllers (cell 2) would be more efficient than groups led by abdicators (cell 8).

Hypotheses 3e through 3h examined mature groups. Hypothesis 3e suggested that abdicator-led groups (cell 7) would be more efficient than groups led by activators (cell 3). In hypothesis 3f, groups with cavalier leaders (cell 5) were selected and their task efficiency was predicted to be superior to those groups led by controller leaders (cell 1). Hypothesis 3g took groups led by abdicators (cell 7) and suggested that efficiency would be greater than in groups led by controllers (cell 1). Finally, hypothesis 3h took groups with cavalier leaders (cell 5) and predicted greater

efficiency than would be found in groups led by activators (cell 3).

Hypotheses 3i through 3l examined mature versus immature groups. In all cases, the hypotheses suggested that the mature groups would be more efficient. In hypothesis 3i, groups with abdicator leaders (cell 7) were predicted to be more efficient than groups with activator leaders (cell 4). Hypothesis 3j took groups with cavalier leaders (cell 5) and posited that efficiency would be greater than in groups with controller leaders (cell 2). Hypothesis 3k suggested that abdicator-led groups (cell 7) would be more effective than controller-led groups (cell 2). Finally, groups led by cavaliers (cell 5) were predicted in hypothesis 3l to be more efficient than groups led by activator leaders (cell 4).

#### Possible Additional Analysis

Data in four additional areas were gathered in this study. These areas were: (1) demographic data, (2) leader confidence, (3) subject confidence, and (4) expertness. Data were gathered for these areas, which represented possible confounding factors, because these variables may interact with the dependent measures obtained in the study. To illustrate, one group may be more effective than another merely because it had a number of group members who have had extensive military experience, and who know the worth of the various survival items. Another group may have had a leader who was very confident that he or she portrayed the leader role accurately,



while the leader in another group may not have felt confident about his or her portrayal of the role. In essence, data in these areas were gathered to broaden the spectrum of the interpretations of the results of this study. Each of these areas is dealt with in turn.

Demographic Data. Four different items were gathered for demographic data on each subject. Sex, military experience, classification in school, and age were all asked on the form presented on Appendix F.

Leader Confidence. Leader confidence was operationally defined through the question presented in Appendix K. After the group had reached consensus on the rankings, leaders were asked the degree to which they felt confident in portraying their role.

Subject Confidence. Subject confidence was operationally defined through the question in Appendix I. After the group completed its joint rankings and before the expert rankings were announced, subjects were asked the degree to which they felt confident that their individual responses were better than the group's.

Subject Expertness. Expertness was operationalized through the question in Appendix I. After the group had completed its joint rankings and before the expert rankings were announced, subjects were asked the degree to which they felt they were expert in the problem the group completed.

## Chapter III

### RESULTS

This chapter presents results of the data analysis. A description of the groups, manipulation checks, statistical tests for each hypothesis, and the effects of possible confounding variables on the dependent measures are reported.

#### Groups

Fifty-six groups participated in this experiment. The twenty-eight mature groups were comprised of 159 individuals (57.2 percent of all subjects) while the twenty-eight immature groups were comprised of 119 subjects (42.8 percent of all subjects). All the immature groups were enrolled in Communication courses (28 groups; 119 subjects). Ten mature groups came from Communication courses (47 subjects) while eighteen mature groups came from Management courses (112 subjects). Females outnumbered males in the immature groups (63; 52.9 percent to 56; 47.1 percent). In the mature groups, males outnumbered females (90; 56.6 percent to 69; 43.4 percent). The mature groups were more advanced in education than the immature groups. The largest portion of the mature groups were seniors (104, 65.4 percent), while the largest portion of the immature groups were freshman (55; 46.2 percent) and sophomores (44; 37.0 percent).

Subjects in the mature groups were generally older than subjects in the immature groups. In the mature groups, 113 subjects (71.3 percent) were between the ages of 21 and 30. In the immature groups, 92 subjects (77.3 percent) were between the ages of 17 and 20.

While each of the four leader styles was represented, a different number of individuals were exposed to each of the styles due to unequal sizes of the groups. The Activator style was present in 73 subjects' groups (26.3 percent), the Controller in 70 (25.2 percent), the Cavalier in 68 (24.5 percent), and the Abdicator in 67 (24.1 percent).

#### Manipulation and Instrument Checks

In order to assess the degree to which leaders portrayed their roles accurately, subjects were presented with descriptions of the four role-styles and asked to indicate which of the four styles they believed best characterized their leader (see Appendix J). Results indicated that leaders were highly

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Insert Table 4 about here

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successful in portraying their assigned roles. Of the 221 group members who made these judgments, 179 (81.0 percent) correctly matched the leader of their group with the assigned description. Table 4 reveals that the Controller and Abdicator styles were the most accurately portrayed, while the Activator role was misperceived most often, and thus was the least accurately portrayed. This finding is identical to

Table 4  
Incorrect Role Perceptions by Style<sup>a</sup>

<u>Style</u>	<u>Number of Incorrect Judgements</u>	<u>Percentages</u>
Controller	8	19.0
Activator	16	38.1
Cavalier	10	23.8
Abdicator	8	19.0

<sup>a</sup>based on 42 incorrect perceptions.

that reported earlier from the pilot study (see page 64).

Additional evidence regarding the accuracy of the portrayal of leader roles was examined by investigating the degree to which subjects who incorrectly perceived their leader were mistaken. For controller leaders, eight subjects misperceived their leader, and seven of these perceived the leader as an activator (87.5 percent). For activator leaders, sixteen subjects misperceived their leader. Of these, eight perceived the leader as a controller (50 percent) and eight perceived the leader as a cavalier (50 percent). For groups with cavalier leaders, five subjects perceived the leader as an activator (50 percent) and five perceived the leader as an abdicator (50 percent). Finally, for groups with abdicator leaders, one subject perceived the leader as a controller (12.5 percent), while seven subjects viewed the leader as a cavalier (87.5 percent).

In order to test the extent to which each of the leaders in the 56 groups correctly portrayed their styles, one-way Analyses of Variance were conducted on each of the three dependent variables, selecting mature or immature groups independently. The results indicated that on satisfaction, the

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Insert Table 5 about here

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styles were significantly different for both mature and immature groups. Post-hoc analyses utilizing the Scheffé test revealed that for mature groups, the differences between activators and controllers, cavaliers and controllers, cavaliers and activators, abdicators and controllers, and abdicators and activators contributed the most to the significance. For immature groups, the Scheffé test indicated that cavaliers and activators, abdicators and activators, and controllers and activators were the most different (see Table 5).

For task effectiveness, a significant difference was found only for the mature groups. The Scheffé test revealed that abdicators and cavaliers, abdicators and activators, and abdicators and controllers contributed the most to the difference. On task efficiency, the styles were not found to be significantly different (see Table 5).

Reliability checks were repeated for the maturity and satisfaction instruments on the actual study data. In order to assess whether the ten maturity scales validly distinguished between mature and immature groups, a Rao's Stepwise

Table 5  
One Way ANOVA and Multiple Range Test  
on Leader Styles

Variable: <u>Satisfaction</u>					
Mature			Immature		
<u>F</u>	<u>P</u>	Multiple Range	<u>F</u>	<u>P</u>	Multiple Range
36.42	.05	4.01	8.5	.05	4.03
<u>Group</u>		<u>Mean</u>	<u>Group</u>		<u>Mean</u>
Group 1 (Con.)		25.85	Group 3 (Cav.)		31.56
Group 2 (Act.)		31.81	Group 4 (Abd.)		33.08
Group 3 (Cav.)		39.16	Group 1 (Con.)		35.50
Group 4 (Abd.)		40.01	Group 2 (Act.)		41.95

Variable: <u>Effectiveness</u>					
Mature			Immature		
<u>F</u>	<u>P</u>	Multiple Range	<u>F</u>	<u>P</u>	Multiple Range
10.22	.05	4.00	0.03	.05	4.01
<u>Group</u>		<u>Mean</u>	<u>Group</u>		<u>Mean</u>
Group 1 (Con.)		34.34	Group 1 (Con.)		10.30
Group 2 (Act.)		34.50	Group 2 (Act.)		13.11
Group 3 (Cav.)		35.97	Group 3 (Cav.)		15.71
Group 4 (Abd.)		44.23	Group 4 (Abd.)		12.82

Variable: <u>Efficiency</u>					
Mature			Immature		
<u>F</u>	<u>p</u>	Multiple Range	<u>F</u>	<u>p</u>	Multiple Range
0.91	.05	4.25	2.31	.05	4.25
<u>Group</u>		<u>Mean</u>	<u>Group</u>		<u>Mean</u>
Group 1 (Con.)		12.71	Group 1 (Con.)		9.00
Group 2 (Act.)		15.71	Group 2 (Act.)		13.00
Group 3 (Cav.)		18.85	Group 3 (Cav.)		15.00
Group 4 (Abd.)		14.85	Group 4 (Abd.)		11.85

Multiple Discriminant Analysis was performed utilizing the ten scales as predictor variables and maturity-immaturity as

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Insert Table 6 about here

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classification criteria. The results indicated that the scales were powerful discriminators between mature and immature groups. Subjects were correctly placed in 81.45 percent of all cases. Ninety-four of the subjects in immature groups (80.3 percent) were correctly placed, while 130 of the subjects in mature groups (82.3 percent) were correctly placed. Nine of the scales were significant discriminators, eight at the  $p < .001$  level (see Table 6). The only maturity scale which failed to significantly discriminate between the two groups was the first item.

The seven satisfaction scales were submitted to split-half and Cronbach alpha reliability tests. The split-half coefficient was .72; the alpha was .79. When the ten maturity scales were tested for reliability, a split-half coefficient of .78 was obtained, while the alpha coefficient was .78.

#### Hypothesis Testing

Three dependent variables were measured in this research. Four hypotheses were advanced for member satisfaction, twelve for task effectiveness, and twelve for task efficiency.

Table 6  
Discriminating Maturity Scales

<u>Item</u>	<u>Standardized Discriminant Function Coefficient</u>	<u>F</u>
1	-0.01	3.23
2	0.68	58.54**
3	-0.05	11.57**
4	0.18	37.25**
5	0.23	10.15**
6	-0.35	7.11*
7	-0.00	10.34**
8	0.54	61.24**
9	0.11	39.25**
10	0.43	53.50**

D.F. = 6  
Eigenvalue = 0.72  
Canonical Correlation = .65  
Wilks' Lambda = .58  
Chi-Squared = 145.89

\*  $p < .01$   
\*\*  $p < .001$

#### Member Satisfaction

Table 7 presents the results of the one-tailed t-tests for member satisfaction. In all cases the mature groups were tested against the immature groups. For each t-test, the degrees of freedom equaled twelve.



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Insert Table 7 about here

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Hypothesis 1a tested the assertion that for groups with activator leaders, member satisfaction would be higher for immature groups. A significant difference was found ( $t = 2.62$ ,  $p < .05$ ). In hypothesis 1b mature groups with cavalier leaders were predicted to be higher in satisfaction than their immature counterparts. A significant difference was revealed ( $t = -2.00$ ,  $p < .05$ ). Hypothesis 1c measured satisfaction in groups with controller leaders, predicting higher satisfaction for immature groups. The hypothesis was supported ( $t = 2.90$ ,  $p < .01$ ). In hypothesis 1d, satisfaction was predicted to be higher for mature groups with abdicator leaders. This hypothesis was also confirmed ( $t = -2.95$ ,  $p < .01$ ).

#### Task Effectiveness

Table 8 presents the results of the eight one-tailed (Hypotheses 2a - 2h) and four two-tailed t-tests (Hypotheses 2i - 2l) for task effectiveness. The first four sub-hypotheses test immature groups only, the next four sub-hypotheses test mature groups only, and the final four sub-hypotheses test mature and immature groups. For each t-test, the degrees of freedom equaled twelve. Only the final four sub-hypotheses, because of the lack of previous research in this area, required two-tailed tests.

Table 7

Student's t-tests for Member Satisfaction<sup>a</sup>

<u>Hypothesis</u>	<u>Immature Mean</u>	<u>Mature Mean</u>	<u>t</u>
1a	35.32	25.78	2.62*
1b	31.68	38.97	-2.00*
1c	42.20	31.65	2.90**
1d	29.23	39.95	-2.95**

\*  $p < .05$ \*\*  $p < .01$ 

<sup>a</sup>The Mean Sum of Squares Within obtained from a 2 x 4 ANOVA was used as the error term in the denominator of the formula (see Chapter II, p. 66). For satisfaction, the  $MSS_w$  was 47.16.

Hypothesis 2a tested the assertion that for immature groups with activator leaders, task effectiveness would be higher than for immature groups with abdicator leaders. Significance was not reached for this hypothesis ( $t = .08$ ,  $p > .05$ ). In hypothesis 2b, immature groups with controller leaders were predicted to be higher in effectiveness than immature groups with cavalier leaders. A significant difference was not found ( $t = .05$ ,  $p > .05$ ). Hypothesis 2c measured effectiveness in immature groups with activator and

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Insert Table 8 about here

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cavalier leaders, predicting higher effectiveness for activator-led groups. A significant difference was not found

Table 8

Student's t- tests for Task Effectiveness<sup>a</sup>

<u>Hypothesis</u>	<u>Group 1 Mean</u>		<u>Group 2 Mean</u>		<u>t</u>
2a	Act.	48.14	Abd.	47.71	0.08
2b	Con.	47.42	Cav.	47.14	0.05
2c	Act.	48.14	Cav.	47.14	0.19
2d	Con.	47.42	Abd.	47.71	-0.05
2e	Abd.	44.57	Act.	35.14	1.79*
2f	Cav.	36.71	Con.	34.00	0.51
2g	Abd.	44.57	Con.	34.00	2.01*
2h	Cav.	36.71	Act.	35.14	0.29
2i	Abd.	44.57	Act.	48.14	-0.68
2j	Cav.	36.71	Con.	47.42	-2.04
2k	Abd.	44.57	Con.	47.42	-0.54
2l	Cav.	36.71	Act.	48.14	-2.18*

\*  $p < .05$ 

Con--Controller Leader  
 Act--Activator Leader  
 Cav--Cavalier Leader  
 Abd--Abdicator Leader

<sup>a</sup>The Mean Sum of Squares Within obtained from a 2 x 4 ANOVA was used as the error term in the denominator of the formula (see Chapter II, p. 66). For task effectiveness, the  $MSS_w$  was 98.19

( $t = .19$ ,  $p > .05$ ). In hypothesis 2d, effectiveness was predicted to be higher for immature groups with controller leaders than for immature groups with abdicator leaders. This

hypothesis was not supported ( $t = -.05, p > .05$ ).

Hypothesis 2e tested the assertion that for mature groups with abdicator leaders, task effectiveness would be higher than for mature groups with activator leaders. Significance was reached for this hypotheses ( $t = 1.79, p < .05$ ). In hypothesis 2f, mature groups with cavalier leaders were predicted to be higher in effectiveness than mature groups with controller leaders. A significant difference was not revealed ( $t = .51, p > .05$ ). Hypothesis 2g measured effectiveness in mature groups with abdicator and controller leaders, predicting higher effectiveness for abdicator-led groups. This hypothesis was confirmed ( $t = 2.01, p < .05$ ). In hypothesis 2h, effectiveness was predicted to be higher for mature groups with cavalier leaders than for mature groups with activator leaders. This hypothesis was not supported ( $t = .29, p > .05$ ).

Hypothesis 2i tested the assertion that a significant difference would be found between mature groups with abdicator leaders, and immature groups with activator leaders. Significance was not reached for this hypothesis ( $t = -.68, p > .05$ ). In hypothesis 2j, mature groups with cavalier leaders were predicted to be significantly different on effectiveness than immature groups with controller leaders. Significance was not achieved for this hypothesis ( $t = -2.04, p > .05$ ). Hypothesis 2k measured effectiveness in mature groups with abdicator leaders and immature groups with controller leaders, predicting a significant difference between the groups. This hypothesis was not confirmed ( $t = -0.54, p > .05$ ). In hypothesis 2l,

effectiveness was predicted to be significantly different between mature groups with cavalier leaders than for immature groups with activator leaders. This hypothesis was supported ( $t = -2.18, p < .05$ ).

### Task Efficiency

Table 9 presents the results of eight one-tailed (Hypotheses 3a-3h) and four two-tailed t-tests for task efficiency (Hypotheses 3i-3l). The first four sub-hypotheses test immature groups only, the next four sub-hypotheses test mature groups only, and the final four sub-hypotheses test mature and immature groups. For each t-test, the degrees of freedom equaled twelve. Only the final four sub-hypotheses, because of the lack of previous research in this area, required two-tailed tests.

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Insert Table 9 about here

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Hypothesis 3a tested the assertion that for immature groups with activator leaders, task efficiency would be higher than for immature groups with abdicator leaders. Significance was not reached for this hypothesis ( $t = .37, p > .05$ ). In hypothesis 3b, immature groups with controller leaders were predicted to be higher in efficiency than immature groups with cavalier leaders. A significant difference was found ( $t = -1.93, p < .05$ ). Hypothesis 3c measured efficiency in immature groups with activator and cavalier leaders, predicting higher efficiency for activator-led groups. A significant

Table 9  
Student's t-tests for Task Efficiency<sup>a</sup>

<u>Hypothesis</u>	<u>Group 1 Mean</u>	<u>Group 2 Mean</u>	<u>t</u>
3a	Act. 13.00	Abd. 11.85	0.37
3b	Con. 9.00	Cav. 15.00	-1.93*
3c	Act. 13.00	Cav. 15.00	-0.64
3d	Con. 9.00	Abd. 11.85	-0.91
3e	Abd. 14.85	Act. 15.71	-0.27
3f	Cav. 18.85	Con. 12.71	1.98*
3g	Abd. 14.85	Con. 12.71	0.69
3h	Cav. 18.85	Act. 15.71	1.01
3i	Abd. 14.85	Act. 13.00	0.59
3j	Cav. 18.85	Con. 9.00	3.17**
3k	Abd. 14.85	Con. 9.00	1.88
3l	Cav. 18.85	Act. 13.00	1.88

\*  $p < .05$

\*\*  $p < .01$

Con--Controller Leader

Act--Activator Leader

Cav--Cavalier Leader

Abd--Abdicator Leader

<sup>a</sup> The Mean Sum of Squares Within obtained from a 2 x 4 ANOVA was used as the error term in the denominator of the formula (see Chapter II, p. 66). For task efficiency, the  $MSS_w$  was 34.40.

difference was not found ( $t = -.64, p > .05$ ). In hypothesis 3d, efficiency was predicted to be higher for immature groups with controller leaders than for immature groups with abdicator leaders. This hypothesis was not supported ( $t = -.91, p > .05$ ).

Hypothesis 3e tested the assertion that for mature groups with abdicator leaders, task efficiency would be higher than for mature groups with activator leaders. Significance was not reached for this hypothesis ( $t = -.27, p > .05$ ). In hypothesis 3f, mature groups with cavalier leaders were predicted to be higher in efficiency than mature groups with controller leaders. A significant difference was found ( $t = 1.98, p < .05$ ). Hypothesis 3g measured efficiency in mature groups with abdicator and controller leaders, predicting higher efficiency for abdicator-led groups. This hypothesis was not confirmed ( $t = .69, p > .05$ ). In hypothesis 3h, efficiency was predicted to be higher for mature groups with cavalier leaders than for mature groups with activator leaders. This hypothesis was not supported ( $t = 1.01, p > .05$ ).

Hypothesis 3i tested the assumption that a significant difference would be found between mature groups with abdicator leaders and immature groups with activator leaders. Significance was not reached for this hypotheses ( $t = .59, p > .05$ ). In hypothesis 3j, mature groups with cavalier leaders were predicted to be significantly different on efficiency than

immature groups with controller leaders. Significance was achieved for this hypothesis ( $t = 3.17, p < .01$ ). Hypothesis 3k measured efficiency in mature groups with abdicator leaders and immature groups with controller leaders, predicting a significant difference. This hypothesis was not confirmed ( $t = 1.88, p > .05$ ). In hypothesis 3l, efficiency was predicted to be significantly different between mature groups with cavalier leaders and immature groups with activator leaders. This hypothesis was not supported ( $t = 1.88, p > .05$ ).

Chapter IV provides a summary and interpretation of the findings reported in this chapter. Thirty-six percent of the research hypotheses were supported, which led the writer to conduct a series of post-hoc analyses in order to discover possible confounding variables. The results of these analyses are reported and discussed also. Subsequent sections include a treatment of the limitations of the study and implications for future research.



## Chapter IV

### DISCUSSION AND CONCLUSIONS

This chapter presents a summary and interpretation of the findings reported in Chapter III, a discussion of possible confounding variables, the limitations and weaknesses in the study, generalizations from these findings, and implications for future research.

Ten of the twenty-eight research hypotheses were supported. Evidence exists for the reasonableness of accepting all four hypotheses for satisfaction, three of the twelve hypotheses for effectiveness, and three of the twelve hypotheses for efficiency. In review, the ten research hypotheses which proved to be statistically significant were as follows:

#### Satisfaction

- 1a. For groups with activator leaders, member satisfaction was higher in immature groups.
- 1b. For groups with cavalier leaders, member satisfaction was higher in mature groups.
- 1c. For groups with controller leaders, member satisfaction was higher in immature groups.
- 1d. For groups with abdicator leaders, member satisfaction was higher in mature groups.

Effectiveness

- 2e. Mature groups with abdicator leaders made fewer errors than mature groups with activator leaders.
- 2g. Mature groups with abdicator leaders made fewer errors than mature groups with controller leaders.
- 2l. There was a significant difference between mature groups with cavalier leaders and immature groups with activator leaders on the number of errors made.

Efficiency

- 3b. Immature groups with controller leaders took less time to complete the task than immature groups with cavalier leaders.
- 3f. Mature groups with cavalier leaders took less time to complete the task than mature groups with controller leaders.
- 3j. There was a significant difference between mature groups with cavalier leaders and immature groups with controller leaders on time required for task completion.

A Search for Confounding Variables

Clearly 36 percent (10 of 28) of the research hypotheses showing support is better than chance (rejection of the three null hypotheses should occur due to a random error of  $p < .05$ ). A thorough analysis requires an attempt to determine which confounding variables existed. It is possible that failure to control for certain variables contributed to the lack of support found for 18 of the 28 research hypotheses.

Several questions in this study measured demographic properties of the groups. In addition, the writer subsequently analyzed several areas which could also mediate these results. These included analyses of leaders' confidence in their portrayal of the leader role, member confidence in their individual rankings of the items, member expertness in survival situations, member military experience, classification in school, confidence in leader styles, and time available for task completion.

Because maturity may be the most important factor in the experiment, a Pearson Product Moment Correlation was obtained

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Insert Table 10 about here

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to assess its relationship to two of the three dependent variables (see Table 10). Since all research hypotheses regarding satisfaction were accepted, the experimental results represent the most parsimonious explanation of satisfaction with leader styles. The two remaining dependent variables (effectiveness and efficiency) were primary concerns since the experimental results could lead to the conclusion that leadership style is important primarily when assessing satisfaction, but only of minor value when assessing effectiveness and efficiency. Table 10 reveals that of the seven variables analyzed, only maturity, classification, age and time were significantly related to effectiveness and efficiency.

Table 10

Correlation Matrix of Confounding Variables  
with Effectiveness and Efficiency

<u>Variables</u>		<u>n</u>	<u>r</u>	<u>r</u> <sup>2</sup>	<u>p</u>
Maturity	with effectiveness	273	.25	.06	.001
Maturity	with efficiency	56	-.28	.08	.019
Classification	with effectiveness	277	-.52	.27	.001
Classification	with efficiency	56	.45	.20	.001
Age	with effectiveness	277	-.43	.18	.001
Age	with efficiency	56	.48	.23	.001
Time	with effectiveness	277	.61	.37	.001
Time	with efficiency	56	-.45	.20	.001
Leader Confidence	with effectiveness	56	.05	.002	NS
Leader Confidence	with efficiency	56	.19	.04	NS
Member Confidence	with effectiveness	219	-.04	.001	NS
Member Confidence	with efficiency	0	***	***	***
Member Expertness	with effectiveness	219	.03	***	NS
Member Expertness	with efficiency	0	***	***	***

\*\*\* Correlation coefficients could not be determined for these variables.

Analyses of covariance were conducted for each non-significant hypothesis, covarying each of the variables which was found significantly related to the dependent variable. Nine hypotheses for task effectiveness and nine hypotheses for task efficiency were subjected to analyses of covariance.

Main effects were significant in seven covariance analyses. Adjusted means for each of these groups compared in the covariance analyses were entered into the numerator of the t-test formula. The denominator included the appropriate  $MSS_w$  value (see page 66). All degrees of freedom equalled twelve.

For hypothesis 3e, which predicted that mature groups with abdicator leaders would be more efficient than mature groups with activator leaders, three covariates produced significant leader style main effects. These were classification ( $F = 4.66$ ,  $p < .05$ ), age ( $F = 7.13$ ,  $p < .05$ ), and time available to complete the task ( $F = 5.81$ ,  $p < .05$ ). All three covariates produced the predicted results for hypothesis 3e. Regardless of whether classification ( $t = -1.83$ ,  $p < .05$ ), age ( $t = -2.08$ ,  $p < .05$ ), or available time ( $t = -1.81$ ,  $p < .05$ ) were covaried, task efficiency was higher in mature groups led by abdicators than in mature groups led by activators.

Similarly, on hypothesis 3h, three covariates produced significant leader style main effects. Hypothesis 3h predicted that task efficiency would be higher in mature groups with cavalier leaders than in mature groups with activator

leaders. The significant main effects were found with the covariates classification ( $F = 5.38$ ,  $p < .05$ ), age ( $F = 5.56$ ,  $p < .05$ ) and available time to complete the task ( $F = 4.66$ ,  $p < .05$ ). Regardless of whether the covariate was classification ( $t = -2.05$ ,  $p < .05$ ), age ( $t = -2.07$ ,  $p < .05$ ), or available time ( $t = -2.13$ ,  $p < .05$ ), mature groups with cavalier leaders were found to be higher in efficiency than mature groups with activator leaders.

Finally, for hypothesis 3k, which predicted that mature groups with abdicator leaders would be higher in efficiency than immature groups with controller leaders, the covariate age produced a significant leader style main effect ( $F = 4.69$ ,  $p < .05$ ). However, hypothesis 3k did not reach statistical significance. Even with age covaried, no difference was found on efficiency between mature groups with abdicator leaders and immature groups with controller leaders ( $t = -1.71$ ,  $p > .05$ ).

From the seven covariance analyses which achieved statistical significance, covariates produced differences in the predicted directions in six t-tests. Only in the two-tailed test (hypothesis 3k) was significance not achieved.

It is clear that the analyses of covariance and subsequent t-tests with adjusted means revealed that several hypotheses did not receive support due to the presence of confounding variables. The results revealed that when classification, age, or available time were covaried, mature groups with abdicator

leaders were found to be higher in efficiency than mature groups with activator leaders. Similarly, when classification, age, or time were covaried, task efficiency was found to be higher in mature groups with cavalier leaders than in mature groups with activator leaders.

### Conclusions

The results from this research reveal several important findings concerning leader behavior and group maturity. In addition, the findings indicate several gaps in our knowledge of these variables due to the lack of confirmation for some hypotheses.

In review, life cycle theory posits that immature groups will perform optimally if matched with controller or activator leaders. The strongest match occurs when immature groups are led by controllers. Conversely, mature groups theoretically perform best when matched with cavalier or abdicator leaders. For mature groups, the match is strongest when led by an abdicator leader.

The results reveal five findings for controller leaders, three for activator leaders, five for cavalier leaders, and three for abdicator leaders. The conclusion that there are a large number of results for controller leaders (a strong match for immature groups) is not surprising. Unexpected, however, is the result that only three findings emerged for abdicator leaders (a strong match for mature groups). The weak match,

cavaliers, produced five findings.

It is interesting to speculate about why the number of findings for abdicator leaders is low. One possible explanation is the fact that the abdicator style is the least "leader like" of all four styles. While the other three styles require that the leader be heavily involved with the group members, the abdicator is not unlike the "laissez-faire" leader. The instructions for the role explicitly call for a "speak-when-spoken-to" leader style portrayal. Because the correct match for an abdicator is with the most mature of groups, group members require little instruction and apparently function independent of the leader. As a result, the abdicator leader, who portrayed the least overt of the four possible leadership styles, had less opportunity to impact upon the group's behavior.

This study yielded the following findings. For controllers, whose correct match is with the most immature group: (1) satisfaction was higher in immature groups, (2) efficiency was higher in immature groups, (3) efficiency was lower in mature groups, (4) effectiveness was lower in mature groups, and (5) even when correctly matched with an immature group, efficiency was not as high as in mature groups with cavalier leaders. For abdicators, whose correct match is with the most mature group: (1) satisfaction was higher in mature groups, (2) effectiveness was higher in mature groups (this result emerged twice), and (3) in mature groups, effectiveness was



higher than immature groups who were correctly matched with an activator leader.

The two remaining styles are weakly matched styles, in that their correct "fit" is not with the extreme mature or immature group. For activators, whose correct match is with a moderately immature group: (1) satisfaction was higher in immature groups, (2) effectiveness was lower in mature groups, and (3) even when correctly matched with a moderately immature group, effectiveness was not as high as in mature groups who were led by abdicators. For cavaliers, whose correct match is with a moderately mature group: (1) satisfaction was higher in mature groups, (2) effectiveness was higher in mature groups, (3) efficiency was higher in mature groups (this result emerged twice), and (4) efficiency was lower in immature groups.

In addition to the information this study provides concerning the four leader styles and their match with a group's maturity level, there are also important statements to report concerning mature versus immature groups. Immature groups were found to be: (1) more satisfied under activator and controller leaders, (2) more efficient with controller leaders, (3) less efficient with cavaliers, (4) less effective with activators than mature groups were with abdicators, and (5) less efficient with controllers than mature groups were with cavaliers. Mature groups were found to be: (1) more satisfied under cavalier and abdicator leaders, (2) more effective under cavaliers and abdicators, (3) more efficient with cavaliers,

- (4) less effective with activators and controllers, and
- (5) less efficient with controller leaders.

In general, these findings: (1) reflect that more favorable results will accrue when the match between leader style and group maturity level is correct, (2) are stronger on the affective measure, satisfaction (for which all four hypotheses were confirmed), than on the performance measures, effectiveness and efficiency (for which only six of the twenty-four hypotheses were confirmed), and (3) even when an immature group is strongly matched with the correct leader style, the results are not as favorable as those from a mature group that is weakly matched.

Because several of the hypotheses were not supported, there are several questions which this study cannot address. We still do not know: (1) What results are produced when an abdicator leader is matched incorrectly with a group's maturity level, (2) whether immature groups are more effective under activator or controller leaders, and (3) what the impact immaturity has upon a group's effectiveness.

#### Limitations

While this study posited twenty-eight hypotheses, only ten were confirmed through statistical analyses. Particularly puzzling is the finding that all four hypotheses related to member satisfaction were confirmed, yet only six of the twenty-four hypotheses on the performance measures of effectiveness and efficiency were substantiated.

There are two possible explanations for these phenomena. One possibility is that Hersey and Blanchard's life-cycle theory, when applied to Shawchuck's leader style typology, is basically correct, but that certain flaws were present in the design and execution of the study which prevented the theory from being fulfilled.

Another possibility may be that life cycle theory, when applied to the leader style typology, is incomplete, thus resulting in the failure to find support for the research hypotheses. On the following pages, each of these possibilities is examined in detail and a conclusion is drawn from these analyses.

#### Is the Theory Incomplete?

Assuming the correctness of the design, several statements may be made regarding the conceptual foundations of life-cycle theory. If the theoretical assumptions are inadequately developed, there is good reason to expect that the hypotheses which were derived from the theory would not be supported.

The theory is correct in two basic respects. First, the four leader styles are indeed distinct from one another. The results presented in Chapter III demonstrated that these leader styles were portrayed with a high degree of accuracy and were easily recognized through the subjects' perceptions and identification of them. Second, the degree to which a leader style is correctly matched with a group's maturity

level does produce differential results. From the ten hypotheses which were confirmed, more favorable results emanated from groups which were matched with the correct leader style. Significant differences were found in all cases on member satisfaction, in three cases on task effectiveness, and in three cases on task efficiency.

The theory is partially correct in one basic aspect. This study presented hypotheses for the measurement of one affective variable (satisfaction) and two performance variables (effectiveness and efficiency). Interestingly, the theory appears to work consistently only with the affective measure. All four hypotheses regarding member satisfaction were confirmed. Only one-fourth of the hypotheses for effectiveness and efficiency were supported. This is a particularly surprising result, given the fact that the affective measure is derived on the individual level while the performance measures are derived on the group level! Because life cycle theory deals with groups and not with the individuals, one would expect that more consistency would be revealed on the performance measures.

There are several possible reasons why the theory was not supported through the statistical tests on the performance measures. First, there is the possibility that the performance measures lack validity. This issue will be examined fully in the next section on design. Second, and more persuasive, is the possibility that the theory does not mix well

with the performance measures. Life-cycle theory is based on maturity, many aspects of which are hypothetical constructs about mental states. Similarly, satisfaction is a hypothetical construct about a mental state. Conversely, performance variables such as effectiveness and efficiency are observable constructs. It may be that Hersey and Blanchard's theory leans far too heavily on the usage of mental state constructs, and thus lacks generalizability to more behaviorally-oriented constructs.

The theory is essentially incorrect in two basic respects. First, scholars have long recognized that a comprehensive theory of leadership must consider the mesh of the leader, the group members, and situational aspects (c.f., Stogdill, 1948). While the theory does well in explaining the leader in a situational context, it does not take into account personal characteristics of group members. The impact these characteristics produce is immense. In this study we found, for example, that both classification and age had a mediating effect on task efficiency.

Second, the theory does not take into account the environmental pressures and demands with which group members must cope in order to accomplish group goals and derive satisfaction. The omission of these aspects is critical. This possibility was demonstrated in this study when allowable time to complete the task was found to have a significant effect on the efficiency performance measure.

In summary, it appears that this theory is not a robust one. Analyses of covariance revealed that both situational and demographic factors such as age, classification, and time available to complete the task diminished the theory's applicability when dealing with effectiveness and efficiency issues.

Is the design flawed?

Assuming the completeness of the theory, the hypotheses in this study may not have been confirmed because of the manner in which the research was conducted or the variables operationalized. If the design and method of the study were flawed, there is good reason to expect that the data would not lend support to the hypothesized relationships.

In addition to the "checks" reported in Chapter II, the design is essentially correct in four basic respects. First, the design allowed for the study of communication process-based behaviors. The four leader styles are identified by the leader's communication. Second, the design allowed for the manipulation of leader behaviors in-context. Unlike the leadership study by Rosenfeld and Plax (1975) where only perceptions of potential leadership behaviors were analyzed, this study utilized actual, performing groups and gathered members' perceptions concerning leaders operating within them. Third, the instructions to each of the leaders were clear and produced highly accurate portrayals of each role. The results presented in Chapter III reveal clear group member identifications of each style and a strong degree of

confidence by the leaders that they had performed their role accurately. Finally, as revealed through Multiple Discriminant Analysis, there was a significant difference on maturity between the mature and immature groups in the study.

The design is potentially incorrect on five grounds. First, the measurement of task effectiveness is possibly flawed. The rank-ordering of items in the simulation would be considerably different between groups whose members wished to remain at the crash site versus groups whose members wished to leave the site. The instructions do not specify whether the members are compelled to stay with the plane. No data are available regarding how the groups in this study viewed their role at the site. The expert rankings, however, are based on the assumption that the members will remain at the site. As a result, groups who decided to leave the crash site would have effectiveness scores that are much higher (worse) than groups who decided to remain.

Second, task effectiveness in this study is operationalized through the difference between the groups' ranking of the survival items and those of the expert. The literature indicates that this is a non-typical way to measure effectiveness (Gibson, Ivancevich & Donnelly, 1979). Traditionally, effectiveness is associated with productivity. To the extent that a group produces a certain quantity or quality of items, a group is traditionally seen as effective. As a result, the measure of task effectiveness may lack validity.

Third, group size was not kept uniform throughout the study. The size ranged from four to seven members. While the unit of analysis for all twenty-eight hypotheses was the group and not the individual, post-hoc analyses presented in Chapter III revealed that the size of the group made a significant difference on effectiveness and efficiency measures.

Fourth, the time available for the groups to complete the task was not kept uniform throughout the study. As noted in Chapter III, the fact that 18 groups had more time to complete the task (approximately two hours) while 38 groups had only 75 minutes played a significant role.

Finally, this study examined only the psychological maturity of groups. The realm of job maturity (Hersey and Blanchard, 1982) was not tapped. As a result, a major aspect of group maturity was not built into the design.

What may be said about the lack of support for these hypotheses? There are strengths and weaknesses in both the theoretical base from which the hypotheses were derived and the design utilized to test the hypotheses.

In essence, the theory appears to be only minimally sound. While the theory has numerous positive aspects, it is definitely limited in applicability because of its inability to deal with tangible variables. Further, the design appears basically sound. There were proper checks on all instruments and proper allowances made for a number of confounding factors.



The theory and design are strong on the affective measurement but are equally flawed on the performance variables. The satisfaction hypotheses were supported because the theory truly related to that type of variable and the design adequately measured the variable. Less success was found for the performance variables. Possible explanations are that (1) life-cycle theory did not relate well to non-perceptual variables, (2) the operationalization of one of the variables was weak, and (3) there were a number of factors which produced mediating effects on the dependent measures.

Another viable explanation for the lack of support for eighteen hypotheses lies in a study of the correlation between the dependent variables. Hypothesized results concerning the relationship between leader style and group effectiveness, or leader style and group efficiency had no derivable pattern, e.g., research hypotheses accepted did not focus on any one leader style or maturity situation to the exclusion of others. This sporadicness may be explained by the fact that effectiveness and efficiency were not significantly correlated ( $r = -.10$ ,  $df = 1$ ,  $n = 56$ ,  $p > .05$ ). Likewise, neither effectiveness ( $r = .04$ ,  $df = 1$ ,  $n = 221$ ,  $p > .05$ ) nor efficiency ( $r = .19$ ,  $df = 1$ ,  $n = 56$ ,  $p > .05$ ) were significantly correlated with satisfaction. Hence, the dynamics of leader style seem to operate differently, depending upon whether the target of concern is satisfaction, effectiveness, or efficiency! In summary, both the theory and the design are strong to a

limited degree, allowing one to place the most confidence in the results concerning the affective measure of satisfaction.

### Generalizations

Two important generalizations can be advanced from these findings. First, the development of an instrument to measure a group's maturity level is of theoretic utility. Second, the finding that a correct match between a group's maturity level and the style of the leader who operates within it produces more favorable results is of pragmatic utility. Each of these generalizations is detailed below.

### Maturity

Reviews of the group maturity construct which were presented in Chapter I indicate that prior to this study, a rigorous measurement technique had not been developed. Therefore, before the impact of maturity upon small group communication could be fully realized, the development of such a measure was necessary.

The results of the pilot and actual study data revealed that the instrument developed was both sound in statistical consistency and powerful in its discriminating ability. The tests reported in Chapter II and III indicate highly acceptable degrees of reliability and validity.

Given these results, it is clear that the instrument is suitable for use in both determining the maturity levels of a given group and for use in small group communication research.

The effect that the development of this instrument can play in advancing small group communication research is immense. As previously noted, the group maturity variable allows for the study of communication processes within small groups. The development of this instrument is a direct attempt to rectify the criticisms offered by Cragan and Wright (1981) and Bormann (1981), who called for more process-oriented variables in small group research. Group maturity is a process-oriented variable. Just as an individual progresses in a lifetime from immaturity to maturity, so does a group's maturity level.

This study is the first attempt to assess the role that communication plays in conjunction with a group's maturity level. As will be discussed in the implications section, research along these lines, utilizing this instrument, should further the development of a process-orientation to the study of small group communication. The development of this instrument has opened several exciting avenues for investigation.

#### Match

What can be done pragmatically with these findings is of prime importance to managers in organizations who utilize small groups. The results clearly indicate two practical applications.

First, these data revealed that group member satisfaction is higher in those groups whose leaders were correctly matched with their maturity levels. In all four cases, the satisfaction hypotheses were confirmed. Interestingly then,

one way that managers can improve the satisfaction reported by their subordinates is to match the appropriate leadership style with the group's maturity level. These findings indicate that for satisfaction to be optimal in small groups, the leader must be correctly matched to the group. Managers, then, should strive to either (1) place leaders with various styles in groups of appropriate maturity levels for their style (hence, the leader is viewed as a constant) or (2) train existing leaders whose style is mismatched to alter their behavior to match the style appropriate for their group.

Second, these data revealed that groups will not perform tasks any faster when the style is matched correctly versus when the style is incorrectly matched. Taking into account the theory and design flaws concerning performance measures discussed earlier, it still does not appear that managers can hope for a group to be more efficient, regardless of how well matched the leader and group's maturity are. Because the measurement of task effectiveness was so tenuous, a generalization from this study regarding that variable is not desirable.

#### Implications for Future Research

The findings from this study are heuristic in nature in that they suggest areas in which additional investigation is warranted. In essence, given these results, by altering certain variables and procedures, a host of exciting questions may be asked.

(1) A task in which subjects are ego-involved should be utilized. The simulation used in this study was an unrealistic one in that none of the subjects were actually involved in the task at hand. Further, there was nothing in the task which could affect the subjects positively or negatively. Unlike more realistic tasks where financial rewards, promotions, or self-achievement are at stake, the subjects could not be benefited or punished regardless of their group's outcome. As a result, some subjects may not have taken the task as seriously as they would have with a task in which they were ego-involved.

(2) The impact of maturity and leader styles should be studied in a long-term task. The task which was utilized in this study was very short-term in nature, accomplished in a range of five to 25 minutes. Whether these results would be different with a task of longer duration is in need of investigation. Because most small group tasks in organizations are ongoing, which require a great deal more time than that which was allowed in this study, there is justification for investigating this question.

(3) The effect that group members have upon a leader's style should be investigated. Leader behavior can either be a cause or an effect. Research has shown that there is a reciprocal influence between leaders and subordinates (Gibson, Ivancevich, and Donnelly, 1982). Just as a leader's style can affect a group's behavior, so can a group's behavior affect a leader's style. For example, a leader may have

participative, democratic tendencies and intentions, yet because a group expects the leader to direct the group, the leader's behavior necessarily changes to an authoritarian-type style. In this research, the styles were given and the group behavior measured. Future studies should attempt to vary the group behavior in an effort to measure its impact on producing a leader style. Leader-member relationships should be studied in such a way that the amount of reciprocal causation may be assessed.

(4) The effect of counteractive influences on a group's maturity should be investigated. Counteractive influences refer to behavior which alters the direction of a group (Gouran, 1981). For instance, a group which is operating under "group-think" principles should undertake certain counteractive behaviors which will allow for the critical appraisal of their ideas. Or, a group which has a high degree of disruptive behavior, such as unproductive conflict, should produce counteractive behaviors such that conflict can be used productively. Similarly, then, there are certain behaviors which when present in a group, will impede a group's progress in maturing at the correct pace. How these behaviors may be counteracted within a group, allowing for the fostering of its maturity, should be investigated.

(5) The impact that personal characteristics of group members has upon the effects of maturity and leader style should be fully investigated. This study has demonstrated

that some individual characteristics had a mediating effect on several of the dependent measures. Yet, this research did not gather any data regarding personality attributes of group members. At least two of these variables may be worth examining. First, a person's locus of control affects responses (Rotter, 1966). Individuals who have an internal locus of control, and thus believe that effects from a task are the result of their own efforts, should generally be more satisfied with participative leadership styles. Conversely, individuals who have an external locus of control, and thus believe that effects from a task do not emanate from their own responsibility, should generally be more satisfied with an authoritarian style of leadership. Second, how individuals react to a leader's style may be partially dependent upon their levels of introversion-extraversion (Eysenck, 1967). Theoretically, the more extraverted a group member is, the less likely he/she will be to accept an authoritarian style of leadership.

(6) The ways in which interaction patterns vary among groups of different maturity levels is also worth investigating. Research has indicated that a major factor which influences a group's interaction is the style of leadership operative within the group. Allowing for this phenomenon, the frequency of interaction among group members, the kinds of content they discuss (such as seeking information, harmonizing), and the division of their input into task and maintenance areas should be described for groups of each level of maturity. One description should be made for these groups

which are matched with the appropriate style of leadership. A second description should be provided for those groups which are incorrectly matched . While this study was totally based upon the communication behaviors exhibited by leaders, such a study as the one described above would focus on the communication behaviors exhibited by a group. Together, these studies would provide extensive information regarding the process of communication in small groups. As more leadership research accumulates, studies such as the ones mentioned above will provide both powerful information and practical utility for those interested in investigating the process of leadership in small group communication.



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## APPENDICES

Appendix A  
Mature Group Leader Selection Method

Name \_\_\_\_\_ Group Number \_\_\_\_\_

Below are four descriptions of various leadership styles. Read each style carefully. Then "predict" what leadership style each member of your group would employ if he/she were appointed the leader in a decision-making task.

Controller Leaders                      High task but low relationship emphasis

Their major concern is getting the task accomplished. They are not concerned about interpersonal relationships within the group. They are there to see that the job gets done, and give as many instructions as possible to the group. They are firm in their requests to the group.

Activator Leaders                      High task and high relationship emphasis

They believe that teamwork is essential to successfully achieve the solution. They are friendly and encouraging at all times, yet also attempt to guide the group in the right direction. They remain positive and open to all ideas, yet structure the members' ideas.

Cavalier Leaders                      Low Task but high relationship emphasis

Their major concern is maintaining harmony among group members and making sure that the climate is one that is conducive to solving the problem. They are not concerned with getting the task accomplished as much as they are concerned that the group members are getting along with each other. They continually reinforce, and make sure that each group member is given his say.

Abdicator Leaders                      Low Task and low relationship emphasis

They believe that it is not the place of the leader to initiate the activities of the group, nor to interact to any sufficient degree with any of the group members. They let the group run its course without interfering or giving specific direction. When presented with a problem or a question, they throw that problem or question back to the group members to solve.

In the blanks below, list each of your group members, then place an "X" in the space that best describes each member.

<u>Name</u>	<u>Controller</u>	<u>Activator</u>	<u>Cavalier</u>	<u>Abdicator</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Appendix B  
Subarctic Survival Scoring Form



PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

128-130

132-134

136-138

140-143

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Appendix C  
Expert's Ranking and Rationale

Appendix D

Standardized Leader Instructions

Appendix E  
Leader Role Descriptions

Appendix F  
Demographic Data

What is your sex? Male\_\_\_\_ Female\_\_\_\_

Have you had any military experience? Yes\_\_\_\_ No\_\_\_\_

What is your classification? Freshman\_\_\_\_

Sophomore\_\_\_\_

Junior \_\_\_\_

Senior \_\_\_\_

Graduate\_\_\_\_

In which age bracket do you fall? 17 - 20 \_\_\_\_

21 - 30 \_\_\_\_

31 - 40 \_\_\_\_

Over 40 \_\_\_\_

Appendix G  
Group Maturity Instrument

Rate the group you have just worked with on the following scales. For each item, circle the number that you feel best describes how your group behaved.

- |  |  |  |
|--|--|--|
| 1. Sets clear goal   |  | Fails to set clear goals                             |
| 1            2            3            4            5          |  | 6            7                                       |
| 2. Guided by the leader  |  | Not dependent on the leader                          |
| 1            2            3            4            5          |  | 6            7                                       |
| 3. Decision-making process shared by all members               |  | Decision-making process not shared by all members    |
| 1            2            3            4            5          |  | 6            7                                       |
| 4. Very little group interaction                               |  | Much group interaction                               |
| 1            2            3            4            5          |  | 6            7                                       |
| 5. Has clear purpose or direction                              |  | Has no clear purpose or direction                    |
| 1            2            3            4            5          |  | 6            7                                       |
| 6. Irrational, hasty   |  | Acts calmly, rationally                              |
| 1            2            3            4            5          |  | 6            7                                       |
| 7. Has flexible methods to solve problems                      |  | Has rigid, pre-set way to solve problems             |
| 1            2            3            4            5          |  | 6            7                                       |
| 8. Seems to work as a collection of individuals                |  | Seems to work as a cohesive unit                     |
| 1            2            3            4            5          |  | 6            7                                       |
| 9. Has sense of group pride                                    |  | Lacks sense of group pride                           |
| 1            2            3            4            5          |  | 6            7                                       |
| 10. Very little commitment to group decisions that are reached |  | Great commitment to group decisions that are reached |
| 1            2            3            4            5          |  | 6            7                                       |



Appendix H  
Satisfaction Instrument

Answer the following questions concerning the task which you have just completed. These should be your feelings.

1. I felt tense and uncomfortable while working with my group on this task.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

2. There was little disagreement among the members of my group on this task.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

3. Some people in the group talked too much.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

4. I talked too much.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

5. I think my group set forth a low quality decision on this task.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

6. Considering the entire problem-solving session, my opinion was given adequate consideration by the other group members.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

7. This group did not make the best use of its time in solving the task.

Strongly  
Agree

Strongly  
Disagree

\_\_\_\_\_

Appendix I  
General Confidence Questionnaire

How confident are you that your individual responses may be better than those that your group came up with?

Very  
Confident

Not at all  
Confident

\_\_\_\_\_

To what degree do you consider yourself an expert in the problem that your group just completed?

Very  
Expert

Not at all  
Expert

\_\_\_\_\_

Appendix J  
Role Identification Form

The leader of your group was assigned a specific leadership style to portray.

Read the following role descriptions carefully and place an "X" beside the style which you believe your leader portrayed.

High task emphasis and low relationship emphasis

\_\_\_\_\_ Your major concern is getting the task accomplished. You are not concerned about the interpersonal relationships within the group. The goal of your group is to accomplish the task--no pleasure is involved. You are there to see that the job gets done. Give as many instructions as possible to your group. Be firm.

High task and high relationship emphasis

\_\_\_\_\_ You place great emphasis on both the tasks and the interpersonal relationships within the group. You are to involve all members, because you believe that teamwork is essential to successfully achieve the solution. You are friendly and encouraging at all times, yet you also attempt to guide the group in the right direction.

Low task but high relationship emphasis

\_\_\_\_\_ You emphasize the socio-emotional relationships within the group and tend to ignore the task concerns. Your major concern is maintaining harmony between the group members. You are not concerned with getting the task accomplished as much as you are concerned with making sure that the group members are getting along with each other.

Low task and low relationship emphasis

\_\_\_\_\_ You emphasize neither the tasks nor the socio-emotional relationship within the group. You are the kind of person who lets the group run its course without interfering or giving direction. Should personal conflicts arise within the group, let the group members solve these conflicts. As much as possible, when you are presented with a problem or a question, attempt to throw that problem or question back to the group members for them to solve or answer.

Appendix K  
Leader-Style Confidence Questionnaire

How confident are you that you accurately portrayed the  
leadership role that was assigned to you?

Very  
Confident \_\_\_\_\_ Not at all  
Confident

What was the time it took the group to complete the ranking?

\_\_\_\_\_ Minutes \_\_\_\_\_ seconds