

A STUDY OF INFORMAL LEADERSHIP OF SMALL MILITARY UNITS
IN SPECIFIC SITUATIONS

by

CHARLES FREDERICK HOUGHTON, JR.

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TABLE OF CONTENTS

INTRODUCTION	1
REVIEW OF LITERATURE	1
THE PROBLEM	9
The Approach of this Study	
Conditions and Materials	
PROCEDURES	13
Assessment Technique	
Application of the Assessment Technique	
Results	
Statistical Treatment of Assessment Technique	
Quantitative Technique	
Application of the Quantitative Technique	
Results	
Statistical Treatment of Quantitative Technique	
SUMMARY AND CONCLUSIONS	44
ACKNOWLEDGMENT	47
BIBLIOGRAPHY	48

INTRODUCTION

In recent years there has been a growing interest in the study of group dynamics generally, and specifically the role of leaders. This has been attributed to the realization that there is a definite need for greater understanding of human relations in order for man to cope adequately and efficiently with the problems that have ascended from his advanced technology. One of the many approaches to a greater understanding of human relations has been through the study of leadership with the belief that a better understanding of groups and their leaders is necessary in order to make an adequate appraisal of the problem of greater human understanding.

REVIEW OF LITERATURE

The two major general approaches in the study of leadership have been the trait analysis and the situational approaches. The trait analysis approach was the first of these two approaches used in studying leadership. Most of the studies of leadership have used this approach to the problem, and leadership has been defined by the methods used in these studies. These methods are sociometric, teacher rating, questionnaire, office holding and training of leaders. In these studies the authors tend to conclude their work with a list of trait-names, as A. W. Gouldner (1) calls them, of varying length and content. Charles Bird, (2)

for example, studying some 20 trait analyses of leadership, found 79 traits mentioned altogether. Bird also found in this study that only five percent of the traits mentioned were common to four or more investigations. The present writer found 92 different traits mentioned in a survey of the literature.

H. O. L. Singer's table, (3) "Traits Most Frequently Mentioned as Important for Leadership in Other Studies, Arranged in Rough Age Groupings", made in his study of factors relating to child leadership selection, shows that "only half of the traits are mentioned more than twice for anyone of the rough grade groupings". Singer's table is evidence of the diversity of traits found in the studies of leadership. There seems to be a continuous lack of agreement by the authors of these studies concerning the traits possessed by leaders.

Table 1. Traits most frequently mentioned as important for leadership in other studies, arranged in rough age groupings,*

Traits	: Preschool : to : 6th Grade	: 6th Grade : to : 12th Grade	: : : College	: : : Adults	: : : Total
Friendly	3	1	2		6
Spontaneous Leadership	2	3	2		7
Dominant	2	1	2		5
Confident	1	1	4	1	7
Cooperative	2	2		1	5
Seeks Attention		1		1	2
Popular	1				1
Follower		1			1
Adaptable		1	1	1	3
Aggressive				1	1
Submissive	1				1
Bashful	1				1
Total					40

* H. O. L. Singer, Table 1. Factors relating to children leadership selection within their own group (Unpublished masters thesis, Kansas State College) 1949 p. 21

The other general approach to the study of leadership has been, as Gouldner states, the situationalist approach. The conduct of these studies has varied greatly, but the various authors have stated that the situation must be considered in studying leadership. However, they have done very little in analyzing the respective group situations with respect to the leadership that occurred in those situations. Cowley (4) contrasted the traits of leaders and followers in criminal, military, and student groups. To a limited number of leaders and followers he gave 28 tests. He found that, while leaders in each group situation possessed traits different from those of the followers, the various types of leaders did not possess a single trait in common. In a later study in which 20 leaders and 20 followers in military groups, 16 leaders and 16 followers in student groups, and 20 criminal leaders and 20 criminal followers were compared. Cowley (5) again reported marked differences in both groups between the leaders and followers, but he found traits of self-confidence and speed of decision common to all three types of leaders.

Murphy (6) considers leadership from the situationalist point of view when he states:

Studies of leadership make it appear that leaders usually have certain characteristics which combine under the term leadership ability. This generalization is misleading. Such factors as forcefulness, self-confidence, alertness and speed of decision are effective components in the solution of many group situations and are, therefore,

generally regarded as leadership qualities, but the variety of possible factors is unlimited. Leadership qualities, so called, vary indefinitely as the needs of the groups vary indefinitely.

In line with Murphy's premise that leadership varies according to the needs of the group, Gouldner states that it might not be uncommon to find that certain groups have particular needs that are common, and the leaders of these groups, therefore, would have characteristics in common.

Caldwell and Wellman (7) conducted studies of child leaders in six types of school activities. These activities were class president, student council members, staff members of the school magazine, athletic-group captains, science club officers, and citizenship representatives. The 7 characteristics studied were mental age, intelligence quotient, scholarship, extroversion rating scale, height, age, and physical achievement; leaders were compared with one another by the type of activity in which they participated. These investigators found athletic leaders to be tallest of the types of leaders and to excel in physical achievement. Staff members of the school paper tended to be cautious, deliberate, and sensitive, as indicated by scores of the extroversion scale. They were shorter than the average of the athletic leaders and ranked high in scholarship. Science club leaders displayed high ability in science and a slight tendency to high scholarship in general. Girls who were selected as officers in the science club were markedly higher

than average in intelligence and scholarship. No consistent or marked differences were noted among the class presidents, student council members, and citizenship representatives. Leaders in these three activities were rated high on extrovert items such as self-confidence, eagerness for self-expression, and insistence upon their ideas.

McCuen (8) studied intelligence-test scores (Thorndike) of the leaders of 58 leaders at Stanford University. The groups were classified as living groups, eating clubs, professional organizations, athletic groups, and social groups. It was found that 35 of the 58 leaders scored higher on the intelligence test than did the average member of the group, but in only one group was the leader the highest scoring member. In one group, on the other hand, the leader was the lowest scoring member. On the average, leaders exceed the members by three points. No consistent relationship could be found between the types of groups and the leaders' scores on the intelligence test.

Richardson and Hanawalt (9) investigated the differences in scores on the Bernreuter Personality Inventory between two types of leaders; namely, supervisors, and office holders. An individual was considered to be a supervisor if he directed the work of 15 or more individuals. A non-supervisor was one who had one individual or none working under him. Office holders were individuals who had been presidents or who had held important chairmanships in at least two social organizations since the age of 21. Non-office holders were individuals who had held no such

position since the age of 21. These investigators found that office holders earned scores indicating that they possessed a great degree of dominance, more self-confidence, less neuroticism, and less introversion than non-office holders. Differences between supervisors and non-supervisors were not distinct on the Bernreuter measures.

Attention now turns to the studies that have been made and the techniques that have been developed for the selection of leaders or individuals for specific roles. These studies also have done very little in the way of analyzing the group situation with respect to leaders' roles. The emphasis has been placed on the individual and the assessment technique used for the selection of leaders. The assessment technique as it has been developed and utilized in most of the studies is a method of evaluating the individuals behavior and personality when he is a member of a group.

The Germans were the first to utilize the assessment technique. By 1938, they had developed a selection program for officer candidates which according to Ansbacher (10) and Farago (11) included the technique of using real life situations in their tests and assessing the "whole personality" in these situations. Little attempt was made to obtain measures of the reliability or validity of the procedures. Jenkins (12) described their program as follows: a board, consisting of a colonel, a medical officer and three Ph.D.'s in psychology, administered various tests in a two-day testing period. This

program included "life-history analysis," "expression analysis," and interest, intelligence, projective and physiological tests. A candidate was evaluated as a "whole person" collectively and qualitatively.

The British soon followed the German military psychologists in adopting a "whole personality" approach to assessing officer candidate applicants. Garforth (13) described the war office selection board inaugurated in 1942. During a three day testing period, applicants for officer candidate school were placed in an informal atmosphere and given traditional intelligence tests, personality questionnaires, clinical interviews and oral trade tests. In addition, they were given a series of leaderless group tests. No statistical evaluation was reported.

The Australian Army War Office Selection Board was influenced by the British use of this technique and adopted the idea in its selection of officer candidates. Gibbs (14) stated: "For the purposes of studying leadership as an interactional phenomenon, a procedure based on leaderless group tests has come to be accepted as the most informative means of assessing candidates."

The United States followed the British in the utilization of the assessment technique in evaluating individuals for specific jobs. The Office of Strategic Service Assessment Staff (15) utilized this technique in its selection of individuals for jobs such as saboteur, resistance leader, liaison man and propaganda expert. Over 5,000 candidates were screened. The

O. S. S. conducted a three day program which consisted of extensive individual and group testing. In addition to standardized intelligence and mechanical aptitude tests, the candidates underwent several leaderless group tests similar to those used by the British War Office. These included a "terrain test" in which the candidates had to infer the history of the farm on which they were being tested, a "brook test" and a "wall test". The latter were obstacles in the path of the group which had to be surmounted by the group as a whole. In addition, many novel and ingenious standardized stress situations were used as techniques for assessing candidates working under frustrating conditions. An autobiography made out by each individual subject was utilized as part of the assessing program. The program also included a leaderless discussion group test. The candidates were rated in effective intelligence, social relations, leadership, energy and initiative. The Bass (16) report on this program states that:

Although a wealth of statistical data was collected in this research, unfortunately the desire for a "wholistic" approach must have carried over to the staff statistician. There were no correlations computed between the assessments based on each of the procedures and the criteria. The overall assessment had a validity of .37 for the three day rating. For assessments made in one day, r was equal to .53. The role that each of the procedures played in increasing or decreasing the validity of the total assessment was not reported, yet these facts would have been of value for future research.

The review of the literature directs attention to two points to be considered in the study of leadership. Namely, leadership

is not a function of an individual alone, but is an intrafunctioning between individuals and the situation of which they are a part, and secondly, the assessment of individuals is used as a method in the evaluation of individuals for specific roles.

The present study endeavors to incorporate these two points by making an analysis of situations and assessing individuals in accordance with the demands of the situation.

THE PROBLEM

The Approach of this Study

This thesis is an exploratory study of informal leadership of small informal military units (reacting) in specific situations. Each situation is so structured that it demands a solution to the problem it presents the group. The nature of the situational problem is such that it demands a collective pattern of behavior by the group in order for the group to solve it effectively. Since collective group behavior is the cooperative interaction of the individual members of the group, that individual who releases into that group situation of which he is a part certain ideas and methods which are accepted by his group, because they indicate a solution to the needs which are sensed, will establish the behavior pattern of the group in its solution of the situational problem. As so stated, leadership is a group process. Leadership is defined in this paper as that

element in a group situation which, when made conscious and controlling, brings a new identity to the objectives, and/or methods, and/or social relationships of the group that is more satisfying to the group as a whole. "Group" throughout this paper means informal group; informal group is defined here as an intrafunctioning among individuals within a designated area for the purpose of accomplishing specific objectives, and so composed that roles among the individual members are not guided along predetermined lines. This also includes perception and reaction to other members as not being related to previously defined roles, but rather to the situation per se plus the particular individual attributes required for the solution of the situational problem. The absence of predetermining lines and relationships emphasizes the fact that structure in this type of group depends upon the situation and the individual attributes demanded by the situation. Informal groups do not fail to recognize differentiation of roles, and to varying degrees consider all individual group members as potential leaders capable of assuming the leadership role, depending upon demands of the group and the individual's acceptance of the role.

Conditions and Materials

The facilities and a large percentage of the material for this study were made available to the investigator by the 10th Inf. Div. Leadership School's staff and personnel. One phase

of the school's program is conducting a spontaneous leader's reaction test. This test is conducted in the field in actual situations. A class is divided into two sections. Each section is then divided or broken down into five man groups. Each of these groups is required to go through the four reaction tests in one afternoon or in one testing period. In each situation there is an expert judge who makes an evaluation of each man's performance based on the individual's spontaneous leadership. The judges utilize a rating sheet in making the evaluation of the individual's performance. The reliability of the rating sheet is .68. A similar rating sheet is used in the designated leadership test; the reliability of which is unavailable to the investigator. The staff and personnel used in the school's testing program were utilized in this study. The layout of the situations is shown on the following map.

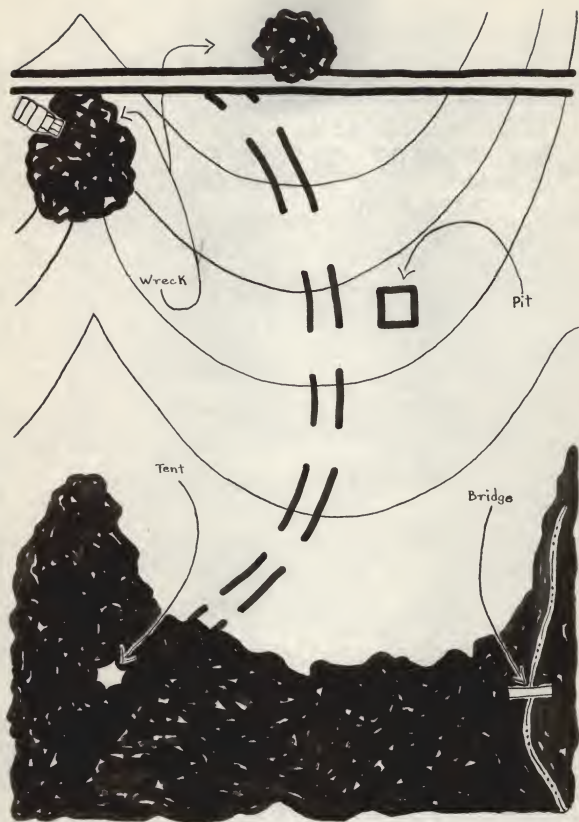


Fig. 1. Contour map of the situation.

PROCEDURES

The method followed in this study is one of prediction by the investigator of the individual group member who will ascend to the leader's role, and validation of the prediction by an expert judge who determines by observation which individual is the leader. The acceptance of an expert's judgment is stipulated for these reasons: the judges have been adequately trained in the selection of leaders in the informal group reaction tests, the judges have had considerable experience in performing this operation, the judges are continually being checked on their rating and selection procedures, and the judges have continually maintained a high degree of agreement when independently judging the same group's action.

Since this study is of an exploratory nature, two different procedures were followed. One of these procedures is best described as an assessment technique. This procedure demands the use of both quantitative and qualitative data in order to obtain an evaluation of an individual's attributes relative to both the demands of the situation and the attributes of the other members of the group in predicting the leader in an informal group situation. The other procedure that was used is best described as a quantitative technique. This procedure demands the use of quantitative data exclusively in predicting the leader in an informal group situation. In order to determine the relative value of each as a technique in predicting leaders a comparison was made. This

comparison was made between the level of significance of the differences between the assessment technique and a chance selection of leaders and between the level of significance of the differences between the quantitative technique and a chance selection of leaders. The critical ratios were then compared to determine the relative value of each as a technique in predicting leaders of informal groups in specific situations.

Assessment Technique

First an analysis of each situation was made. This analysis, the investigator's, was based on a description of the situation, instructions given in each situation and the individual attributes called forth by each situation. This is shown in Table 2. The attributes listed in the "Individual attributes demanded by each situation" category were based on what the investigator believes to be the essential individual characteristics demanded by each situation to solve effectively each situational problem.

Table 2. Situational analysis.

Description of situation	Instructions given on each situation	Individual attributes demanded by each situation
<p><u>Sit. #1 Tent Erecting</u></p> <p>The members of the group, five in number are gathered together along an unimproved road in an open area of a wooded draw. In the open area there is an unpitched tent haphazardly piled on the ground. The tent is the type that the individuals have had no instruction in pitching.</p>	<p>The company commander has just come by and has left the following instructions: "You men are to erect that supply tent so that the door of the tent will face the road. All necessary materials are provided. No further instructions will be given and no questions will be answered."</p>	<ol style="list-style-type: none"> 1. Mechanical Ability 2. General Ability. 3. Social Relationships 4. Motivation 5. Initiative 6. Physical Ability
<p><u>Sit. #2 Bridge Construction</u></p> <p>The members of the group are gathered together along an intermittent stream in a wooded draw. On the bank directly across from the group is a pile of scrap lumber cut so that no single piece is long enough to span the stream.</p>	<p>"You are to build a bridge with just the material you find in this general area strong enough to support a company of men single file five on the bridge at one time. The company will use the bridge tonight, and it is reported that a heavy rain is due at dusk."</p>	<ol style="list-style-type: none"> 1. Mechanical Ability 2. General Ability 3. Social Relationships 4. Motivation 5. Initiative 6. Physical Ability

Table 2 (cont.)

Description of situation	Instructions given on each situation	Individual attributes demanded by each situation
<p><u>Sit. #3 Wreck</u> The group is assembled around a large tree along side of a dirt road. West of the tree along the road at a distance of fifty yards is a truck which has hit a tree. There is a man in- side of this truck slumped against the steering wheel. There is a second man in a hysterical state.</p>	<p>No instruction is given, only the following action takes place. The man who is in a high state of hysteria comes running up the road shouting: "My buddy has been hurt", numerous times.</p>	<ol style="list-style-type: none"> 1. First Aid Ability 2. General Ability 3. Social Relationships 4. Motivation 5. Initiative 6. Physical Ability
<p><u>Sit. #4 Pit</u> The group comes upon a man lying at the bottom of an 8 ft. pit. He is lying in an un- natural position and moaning.</p>	<p>No directions are given.</p>	<ol style="list-style-type: none"> 1. First Aid Ability 2. General Ability 3. Social Relationships 4. Motivation 5. Initiative 6. Physical Ability

The study was originally designed to include all four of the situations listed in Table 2. A substitute judge replaced a regular judge at the tent situation, which made it impossible to use the tent situation in this study. The judge at the tent situation was not from the regular field committee, but had been previously associated with the class used in this study. Therefore, the tent situation was not considered for it was believed that a halo effect might have an influence on the evaluations made by the judge. The other judges were from the regular field committee, and had no previous association with the class. Since first association with the class was in the field, it was believed that their evaluations were not influenced by previous impressions of the individuals of the class.

After the essential individual attributes were set up in the situational analysis, information was collected concerning these attributes as possessed by each individual. Information on mechanical ability, medical ability, general ability, and social relationships was obtained from personnel records and social climate interviews. The information obtained from the records was tabulated as shown in Table 3.

Table 3. The general ability scores, mechanical aptitude scores and experience data of each individual of five man groups.

Group	AI	A7	Med. Exp.	Civ. Exp.	Ed. Exp.	Mil. Exp.
Group I						
A	114	110	none	student	2yrs.col.econ.	2½yrs.USNR
B	131	137	none	surveyors helper	1yr.col.gen.	1yr.NG.
C	145	146	none	1½yrs.residentEng.	Hschool	11mons.Inf.
D	118	116	none	2½yrs.lineman electric co.	Hschool	6mons.NG.
E	133	131	none	Tennis Pro.	4yrs.col.Bus.Ad.	1yr.NG.
Group II						
A	123	129	none	student	Hschool	none
B	121	129	none	student	1½yrs.col.gen.	none
C	99	92	none	farmer	Hschool	none
D	154	147	none	student	2½yrs.col.law	none
E	125	129	none	student	2yrs.col.Gen.	none

Table 3. (cont.)

Group	AI	A7	Med. Exp.	Civ. Exp.	Ed. Exp.	Mil. Exp.
Group III						
A	107	126	none	student	2yrs.col.gen.	none
B	116	116	none	student	Hschool	none
C	143	136	none	student lab.asst.	1yrs.col.civ.eng.	none
D	116	100	none	farmer	Hschool	none
E	113	122	1yrs.surg. tech.	student	Hschool	4yrs.Med. Corps.
Group IV						
A	132	125	none	student	3yrs.col.Bus.Ad.	none
B	136	126	none	student	3yrs.col.Eng.	3yrs.Inf.
C	114	107	none	student	2yrs.col.Eng.	none
D	108	115	none	mechanic	Hschool	1yr.tanker
E	142	146	none	Marine arch. 1yrs.	1yrs.col.Eng.	none

Table 3. (concl.)

Group	AI	A7	Med. Exp.	Civ. Exp.	Ed. Exp.	Mil. Exp.
Group V						
A	122	132	none	Comm.art.	3yrs.col.comn.art	1yr.AFcadet
B	140	136	none	tab.mach.operator	2yrs.col.Bus.Ad.	2yrs.admin.
C	132	121	none	Acct.	4yrs.Bus.Ad.	2½yrs.Inf.
D	127	124	none	student	1yr.col.Arch.	none
E	145	138	none	7½yrs.plumb.const.	5yrs.col.Bus.&Mag.	1½yrs.WG.
Group VI						
A	108	105	none	student	Hschool	none
B	109	112	6yrs.med.school	student	6yrs.pre.med.&med.sch.	none
C	133	122	none	student	2½yrs.col.civ.eng.	none
D	148	142	none	student	2½yrs.col.civ.eng.	none
E	121	107	none	student	1½yrs.col.Bus.Ad.	none
Legend:	AI-General ability A7-Mechanical aptitude Med.Exp.-Medical experience Civ.Exp.-Civilian experience Ed.Exp.-Educational experience Mil.Exp.-Military experience					
	MG-National Guard Inf.-Infantry USNR-U.S. Naval Reserve AF-Air Force Hschool-Highschool Col.-College					

The social climate interview was used for the purpose of obtaining information on the groups social relationships, and to determine as closely as possible the groups overall social atmosphere. This is deemed necessary because poor social relations or social rejection of an individual hinders the possibilities he has to ascend to the leaders role in informal group situations. The interview was conducted with each member of all of the groups studied during a break provided for these men just prior to their spontaneous leadership test. The nature of the interview was as follows: each member of a group was asked individually these questions.

1. Which member of members of your group would you like to have go on a pass with you?

2. Which member or members of your group you wouldn't like to have go on a pass with you?

3. Which member or members of your group would you like to have go on a leave with you?

4. Which member or members of your group you wouldn't go on a leave with?

The investigator found no social rejections in the group, and the atmosphere that prevailed was one of cooperation.

The other essential attributes for each situation were of such a nature that specific information of each of these attributes for each individual could not be obtained. However, they were not disregarded but were handled in the study as follows:

1. Motivation is pertinent to leadership in informal groups. Even though an individual has the attributes to handle the demands of the situation to a greater degree than the other members of his group, if he refuses to utilize his attributes in the situation he psychologically removed himself from the group of which he is a part. Therefore, motivation is an essential property of this study in the prediction of leaders. In this study an attempt was made to control motivation by selecting individuals believed to be sufficiently motivated for these reasons:

a. The individuals utilized for the predictions made in this study had expressed a desire to become military leaders, and to attend the leadership school.

b. Individuals desiring to attend officer candidate school, a more advanced military leader's school, must first graduate from the leadership school. It was from this contingent that the individuals used in this study were taken.

c. An incentive for each individual to do his best was his realization he was being rated, but on what basis he did not know.

2. Initiative is a manifestation of motivation. Initiative in this study is defined as that amount of overt physical and/or verbal activity which the individual directs toward the solution of the problem, and as such is another essential property of this study in the prediction of leaders.

3. The minimum physical requirements for each situation

were met by all individuals used in this study because these men have successfully met the Army's physical requirements.

Application of the Assessment Technique

The recorded information was utilized as follows in applying the assessment technique. The situational demands of the bridge situation were considered with respect to each individual as measured by his AI and A7 scores and as shown by his previous experience based on the record of his civilian occupational experience, educational experience, and military experience. In the case of the first aid situation, the AI score and the records of experiences with the additional record of medical experience were considered with respect to the first aid situational demands.

The next step followed in this procedure was to compare the individuals of the group. The method used in making this comparison was as follows:

For the Bridge Situation. 1. The mechanical aptitude scores, AI, gave evidence as to which individual had the superior mechanical aptitude.

2. The records of experiences of the individuals provided an insight into the mechanical backgrounds of the individuals. This background is indicative of the individual's mechanical ability to the extent that the nature of the occupation and the length of time in the occupation is an indication of mechanical ability.

3. The general ability scores indicated the individual of the group who was superior in general ability.

4. A tentative prediction of the group leader of the bridge situation was made using these data.

For the First Aid Situation. 1. The same method was used in making comparison of the individuals of a group for the first aid situations as was used for the construction situation with this exception; medical experience was considered in lieu of mechanical aptitude and mechanical experience in making the tentative prediction.

2. The record of medical experience provides an insight into the individual's medical background, and as previously stated gives an indication of an individual's medical ability.

After the tentative prediction was made the procedure of this study was as follows: The social climate interview was conducted just prior to the group's entrance into the spontaneous leadership test. This was deemed necessary in order to determine as closely as possible the social relationships as the group started the action. As soon as the social climate interview was completed the investigator made his final prediction of the group member he forecast to be the leader of the group. The basis for this prediction was the information obtained from the recorded data and the social climate interview of the group. This prediction by the investigator was not known by the judges.

Ten predictions were made from the six groupings of individuals listed in Table 3. These six groupings were chosen for these reasons:

1. They were left intact the day the testing took place. Other groups were rearranged due to circumstances beyond the control of the investigator.

2. Evaluation could be made of all the members of the group. Personnel records were incomplete or unattainable for a number of individuals in other groups.

3. These groups were available for the study. Other groups in the class were in other activities at the time the spontaneous leadership test was being conducted.

4. The individuals in these groups were believed to be sufficiently motivated.

In two of the six groupings there were two individuals who had the demanded attributes to a greater degree than the other members of their groups. One of the individuals in each group had the attributes demanded by the bridge construction situation and the other individual had the attributes demanded by the two first aid situations as determined from the personnel records information, making it possible to predict three group leaders from one grouping. Therefore, each one of these two groupings acted as three groups with respect to the definition of "group" as used in this paper, thus accounting for six groups. The other four groups were the groupings in which only one individual met the leadership demands of one situation, the bridge construction situation, as determined from the personnel records

information. No attempt was made to predict leaders for these four groups for the first aid situations. It was impossible to make an assessment of these individuals with respect to the first aid situations from the information available. Therefore, in keeping with the use of the assessment technique as a method of prediction only ten predictions could be made from these six groupings.

After the final prediction was made the group entered the situation area at which time the group was given their instructions by the judge at the situation. On completion of the instructions the group entered the situational problem. During the group's action in the situation, the group was observed by the judge. The judge's observation of the group was for the purpose of evaluating the spontaneous leadership exhibited by each individual member of the group and rating each individual accordingly. From his observation the judge designated the group's leader in two ways, by a rating score and by a check mark. His judgment was not seen by the investigator until after the group had left the situation.

Results

The result of utilizing this technique was as follows: the expert judge designated ten leaders of which nine in ten were in agreement with the predictions made using this technique. In the two groupings having the two individuals with

different attributes demanded by the three different situations, the individuals whose attributes met the requirements of the bridge construction situation were the leaders in that situation. The other individuals whose attributes met the requirements of the two first aid situations were the leaders in those situations except in one case, the pit. This apparently was due to the individual's lack of sufficient motivation, as was shown by the fact that although he was looked to for leadership by the other members of his group he would not accept the leader's role. Although there is a lack of sufficient number of cases, the evidence indicates that leadership seems to reside as a functional relationship between the individual and the other members of the group.

Statistical Treatment of Assessment Technique

The results of prediction of leadership by the assessment method was compared to the possibility of leadership by chance alone. There were five men in a group. The possibility of any one individual being the leader by chance alone is one in five, and in ten groups it is 10 in 50. Therefore, in 20 percent of the cases, leaders can be predicted by chance probability, but by using the assessment technique leaders were predicted in 90 percent of the cases. The level of significance of the differences between these two percentages was computed in order to determine the relative value or merits of the assessment

technique as a prediction measure. This was done by utilizing the standard error of the percentage and the standard error of the difference between two percentages in computing the critical ratio. The formulas for this are as follows:

$$\sigma\% = 100\sqrt{\frac{PQ}{N}}$$

The standard error of the percentage.

$$\sigma_D\% = \sqrt{\sigma\%_1^2 + \sigma\%_2^2}$$

The standard error of the difference between two percentages.

$$CR = D/\sigma_D\%$$

The critical ratio.

The critical ratio was found to be 11.02 which is higher than 2.58, the critical ratio for the significance at the 1 percent level of confidence. Therefore, the assessment technique is of value in predicting informal leaders in the specific situations that were studied.

Quantitative Technique

The object in using the quantitative technique was to compare the value of quantitative measurements as a method of predicting leaders of informal groups with the value of the assessment technique as a method of predicting leaders of informal

groups. Only a limited number of quantitatively expressed variables were available for use in this study. These variables were dismounted drill, physical training, 10 minute talks, AI (general ability), A7 (mechanical aptitude), and LRTII (designated leadership). Of these, the last three were selected to be used in this study. The reason they were selected was because they had more of a bearing on the informal group situational demands than the other variables. The LRTII variable is obtained from another situational test given in the field in actual situations similar to the situations used in the spontaneous leadership test. The AI and A7 variables as we know from their use in the assessment technique have a direct bearing on the informal group situational demands. The other variables mentioned above were obtained from the classroom or drill field activities of the class. The very nature of these activities and the scores that were obtained from them have very little bearing on informal group situational demands. In addition, the correlations of the selected variable with the criterion variable, (experts' judgment), although low, were higher than the non-selected variables. The AI and A7 scores were obtained from the personnel records of each individual, and the LRTII score for each individual was obtained from the designated leadership test record. The data are presented in Table 4.

This technique was applied to ten groups. These groups were the six groups used in the assessment technique and the

other four five man groups of the class. These other four groups were rearranged groups that couldn't be used in the assessment technique. The very nature of the quantitative technique which uses just quantitative measurements as a basis for prediction allows the uses of these additional five man groups.

Table 4. Quantitative data per member of five man groups.

Group	AI	A7	LRTII	:	Group	AI	A7	LRTII
Group I					Group II			
A	114	110	55		A	123	129	89
B	131	137	48		B	121	129	82
C	145	146	78		C	99	92	69
D	118	116	71		D	154	147	81
E	133	131	55		E	125	129	77
Group III					Group IV			
A	107	126	63		A	132	125	62
B	116	116	90		B	136	126	83
C	143	136	70		C	114	107	65
D	116	100	83		D	108	115	69
E	113	122	81		E	142	146	62
Group V					Group VI			
A	112	132	90		A	108	105	86
B	140	136	64		B	109	112	81
C	132	121	46		C	133	122	75
D	127	124	54		D	148	142	97
E	145	138	66		E	121	107	66

Table 4. (cont.)

Group	AI	A7	LRTII	Group	AI	A7	LRTII
Group VII				Group VIII			
A	125	113	76	A	112	103	98
B	141	132	42	B	121	131	74
C	134	118	70	C	124	131	71
D	117	128	81	D	134	131	47
E	114	112	79	E	126	117	62
Group IX				Group X			
A	126	117	92	A	134	142	70
B	129	110	88	B	141	142	38
C	117	117	86	C	115	87	55
D	120	117	90	D	132	132	78
E	118	127	43	E	115	119	60

Legend: AI - General ability
A7 - Mechanical aptitude
LRTII - Designated leadership score

Application of the Quantitative Technique

Since this was a quantitative technique a statistical procedure of utilizing quantitative measurements for the purpose of making predictions was used. The statistical tool is multiple regression and the formula is as follows:

$$\bar{X} = b_1.234 X_2 + b_2.134 X_3 + b_3.124 X_4 + K$$

\bar{X} : the criterion score or in this case the expert's score. b (subscript): are the predictive values of each variable. X (subscript): are the individuals scores for each variable. K : a constant.

The means, standard deviations, and the orders of the correlation coefficient of the various variables are shown in the following Tables 5, 6, 7, 8 and 9. The number of cases is 69.

Table 5. Means.

Bridge	:	15.08
Wreck	:	13.60
Pit	:	15.08
LRTII	:	68.50
AI	:	124.30
A7	:	121.20

Table 6. Standard deviations

Bridge	:	3.732
Wreck	:	3.040
Pit	:	2.704
LRTII	:	14.370
AI	:	11.320
A7	:	13.340

Table 7. Zero order correlations.

	Bridge situation	Wreck situation	Pit situation
r ₁₂	.098	.001	-.052
r ₁₃	.185	.140	.038
r ₁₄	.307	.038	.176
r ₂₃	.018	.018	.018
r ₂₄	-.038	-.038	-.038
r ₃₄	.741	.741	.741

Table 8. First order correlations.

	Bridge situation	Wreck situation	Pit situation
r _{12.3}	.065	-.002	-.053
r _{12.4}	.104	.002	-.046
r _{13.2}	.184	.140	.039
r _{13.4}	-.065	.116	-.136
r _{14.2}	.305	.039	.174
r _{14.3}	.255	-.097	.205
r _{23.1}	.000	.019	.020
r _{23.4}	.068	.068	.068
r _{24.1}	-.008	-.038	-.021

Table 8 (cont.)

	Bridge situation	Wreck situation	Pit situation
r	-.079	-.079	-.079
24.3			
r	.732	.743	.749
34.1			
r	.742	.742	.742
34.2			

Table 9. Second order correlations.

	Bridge situation	Wreck situation	Pit situation
r	.089	-.009	-.037
12.34			
r	-.066	.167	-.134
13.24			
r	.249	-.096	.202
14.23			
r	.009	.070	.053
23.14			
r	.732	.742	.749
34.12			

Legend of variables for tables:

- 1 = Judgment of expert
- 2 = LRTLI (designated leadership score)
- 3 = A7 (mechanical aptitude)
- 4 = AI (general ability)

The partial standard deviations and the partial coefficients for the independent variables are shown in the following tables.

Table 10. Partial standard deviations

	Bridge situation :	Wreck situation :	Pit situation
$\sigma_{1.234}$	3.472	2.996	2.647
$\sigma_{2.134}$	14.299	14.361	14.341
$\sigma_{3.124}$	8.924	8.831	8.938
$\sigma_{4.123}$	6.479	7.574	7.584

Table 11. Partial regression and constant (K). coefficient

	Bridge situation :	Wreck situation :	Pit situation
$b_{12.34}$.017	-.001	-.006
$b_{13.24}$	-.025	.055	-.040
$b_{14.23}$.133	-.027	.070
K	-2.29	10.99	11.64

Using the partial regression coefficients and substituting their respective values in the multiple regression equation, we obtain the three basic equations used in the quantitative technique. These are as follows:

Basic Equations

$$\text{Bridge } \bar{X} = .017 x_2 + (-.025) x_3 + .133 x_4 + (-2.29)$$

$$\text{Wreck } \bar{X} = -.001 x_2 + .055 x_3 + (-.027) x_4 + 10.99$$

$$\text{Pit } \bar{X} = -.006 x_2 + (-.040) x_3 + .070 x_4 + 11.64$$

An example of the use made of the multiple regression equation is as follows:

For group 1. at the bridge situation

$$\bar{X} = .017 x_2 + (-.025) x_3 + .133 x_4 + K \dots \text{Basic equation}$$

- | | | |
|---|--|-------------------------------|
| A | $\bar{X} = .017 (55) + (-.025) (110) + .133 (114) + (-2.29)$ | Values substituted into basic |
| | $\bar{X} = 11.05$ | |
| B | $\bar{X} = .017 (48) + (-.025) (133) + .133 (131) + (-2.29)$ | equations |
| | $\bar{X} = 12.35$ | |
| C | $\bar{X} = .017 (78) + (-.025) (146) + .133 (145) + (-2.29)$ | |
| | $\bar{X} = 14.67$ | |
| D | $\bar{X} = .017 (71) + (-.025) (116) + .133 (118) + (-2.29)$ | |
| | $\bar{X} = 12.00$ | |
| E | $\bar{X} = .017 (55) + (-.025) (131) + .133 (133) + (-2.29)$ | |
| | $\bar{X} = 13.06$ | |

Each group's quantitative scores, for the three different situations, were computed in this manner. The high score indicates the quantitatively predicted leader of the group. In the example above member C of the group was the quantitatively predicted leader and incidently the expert's designated leader.

Results

Utilizing the previously stated multiple regression equations for 10 groups per situation, it was found that by using the quantitative data for the prediction, there was agreement with the expert's judgment in 5 of 10 cases for the bridge situation. In the wreck situation there was agreement with the expert's judgment in 2 of 10 cases. In the pit situation there was agreement with the expert's judgment in 2 of 10 cases. These relationships are shown in Table 12.

Table 12. Expert scores vs. quantitatively predicted scores of individuals of five member groups.

Bridge					
Group I	j.e.	q.p.	Group II	j.e.	q.p.
	16	11.05		16	12.36
	18	12.35		18	11.97
	19	14.67		18	9.90
	<u>12</u>	<u>12.00</u>		19	<u>15.50</u>
	16	13.06	<u>15</u>	<u>11.00</u>	
Group III	j.e.	q.p.	Group IV	j.e.	q.p.
	10	12.86		18	14.01
	18	10.89		19	14.05
	20	13.41		16	12.82
	<u>18</u>	<u>11.07</u>		16	12.33
	10	11.54	<u>20</u>	13.99	
Group V	j.e.	q.p.	Group VI	j.e.	q.p.
	18	12.16		10	11.32
	16	14.02		8	11.78
	14	13.02		18	14.62
	16	13.23		20	15.50
	<u>20</u>	14.66	<u>16</u>	<u>12.25</u>	
Group VII	j.e.	q.p.	Group VIII	j.e.	q.p.
	18	12.00		<u>17</u>	13.26
	<u>16</u>	13.07		8	11.75
	12	13.32		14	11.58
	16	11.50		16	11.60
	9	11.54	12	<u>13.31</u>	
Group IX	j.e.	q.p.	Group X	j.e.	q.p.
	18	12.20		<u>18</u>	13.17
	18	11.53		14	13.55
	18	11.73		16	12.23
	18	12.13		17	11.43
	<u>20</u>	11.07	17	11.28	

Table 12 (cont.)

Week					
Group I	j.e.	q.p.	Group II	j.e.	q.p.
	9	14.91		9	14.67
	15	14.94		12	14.74
	16	14.96		10	13.74
	10	14.11		11	12.92
	18	14.55		10	14.53
Group III	j.e.	q.p.	Group IV	j.e.	a.p.
	12	13.61		10	14.35
	12	14.51		14	13.96
	12	15.81		9	11.75
	12	12.21		9	12.84
	18	14.57		10	14.16
Group V	j.e.	q.p.	Group VI	j.e.	q.p.
	12	14.97		14	14.03
	12	13.46		18	14.13
	12	14.16		17	14.04
	14	14.33		14	14.71
	16	14.60		14	14.67
Group VII	j.e.	q.p.	Group VIII	j.e.	q.p.
	14	14.40		19	14.27
	14	12.87		18	14.85
	17	14.83		12	14.73
	14	13.47		14	14.60
	16	12.76		10	14.06
Group IX	j.e.	q.p.	Group X	j.e.	q.p.
	12	13.91		18	15.14
	14	13.77		14	15.04
	18	14.12		14	11.86
	19	14.02		19	14.77
	18	14.81		18	14.65

Table 12 (concl.)

Pit					
Group I	j.e.	q.p.	Group II	j.e.	q.p.
	14	14.92		<u>18</u>	14.56
	14	15.05		<u>12</u>	14.46
	18	15.48		12	14.55
	<u>14</u>	<u>14.83</u>		12	<u>15.85</u>
	14	15.38		16	<u>14.77</u>
Group III	j.e.	q.p.	Group IV	j.e.	q.p.
	<u>18</u>	<u>15.80</u>		<u>18</u>	15.51
	<u>14</u>	<u>14.58</u>		<u>12</u>	<u>15.62</u>
	16	15.02		12	<u>14.95</u>
	14	15.30		14	14.19
	9	14.19		12	15.37
Group V	j.e.	q.p.	Group VI	j.e.	q.p.
	<u>19</u>	<u>14.36</u>		12	14.42
	<u>14</u>	<u>15.62</u>		<u>18</u>	14.30
	18	15.86		<u>15</u>	15.62
	14	15.25		16	<u>15.74</u>
	14	<u>15.88</u>		16	<u>15.43</u>
Group VII	j.e.	q.p.	Group VIII	j.e.	q.p.
	14	<u>15.99</u>		<u>20</u>	13.78
	12	<u>15.88</u>		<u>12</u>	14.43
	<u>18</u>	12.44		12	14.51
	<u>10</u>	14.48		18	<u>15.50</u>
	14	15.53		12	<u>15.21</u>
Group IX	j.e.	q.p.	Group X	j.e.	q.p.
	14	15.12		14	15.64
	10	<u>15.53</u>		14	15.83
	18	<u>15.67</u>		19	<u>16.21</u>
	<u>14</u>	<u>13.93</u>		<u>20</u>	<u>15.46</u>
	14	11.48		<u>12</u>	14.93

Legend: j.e. - judgment of expert
q.p. - quantitative prediction
High score in group designate the leader
for both j.e. and q.p. This is indicated
by underlining.

Statistical Treatment of Quantitative Technique

Since there are five possible leaders per group per situation, the probability of anyone of the individuals ascending to the leader's role by chance is one in five. In a group of 50 it is 10. By utilizing the same statistical procedure as was used in the assessment technique the critical ratio between the quantitative technique and chance selection of the leader was computed. The critical ratios obtained were as follows:

- CR (Bridge) = 4.91 Significant above .01 level of confidence
- CR (Wreck) -- Equal to chance, therefore, not significant
- CR (Pit) ---- Equal to chance, therefore, not significant

Therefore, the quantitative technique as a predictive device with reference to the bridge situation is better than chance alone more than 99 times out of 100, but on both of the first aid situations, the wreck and the pit, the results were equal to a chance selection of the leader.

Comparing the quantitative technique with the assessment technique as a method of predicting informal leaders in specific situations, the assessment technique is of greater value as shown by their respective CR's.

CR (Assessment) = 11.02

CR (Quantitative) = 4.91

An additional inquiry was made concerning the relationship between the scores the experts gave the individuals in the various situations. The Pearson Product Moment Correlation

coefficients were computed for the scores made by the individuals on various situations. The correlation coefficients are tabulated in Table 13.

Table 13. The correlation coefficients of the scores made by the individuals in various situations.

	: : Wreck	: : Pit
Bridge	.113	.157
Wreck		-.007

The correlation coefficients indicate a low positive to a low negative relationship between the scores obtained by the individuals on one situation with the scores obtained by the same individuals on another situation. The essentially chance relationship between the two first aid situations is rather surprising. The small amount of medical experience in these 10 groups, as determined from their personnel records, probably is the reason for this lack of correlation.

SUMMARY AND CONCLUSIONS

Studies of leadership have suggested that the situation is an important aspect in the study of leadership. This concept is of value and can be profitably used in the selection and determination of leaders. The Germans, the British, the Australians, and the Americans used this concept in their selection of officer candidates. However, very little has been done in the way of analyzing the situation with respect to the selection and determination of leaders. An analysis of the situation for which the individual is being selected is the basis on which to assess the individual.

In this study the investigator attempted the use of a situational analysis in conjunction with an assessment technique as a method of determining leaders.

The problem of informal leadership of small military units in specific situations was studied. An exploratory approach to this problem was undertaken. Two procedures were followed in this study. An assessment technique was used as one procedure. This technique consisted of using qualitative data and quantitative data for the purpose of predicting the member of an informal group who will ascend to the leader's role. The prediction was validated by an expert's judgment. The expert's judgment was based on his observation of the group in a situational problem. The other procedure employed a quantitative technique. Quantitative data were used exclusively in making

a prediction of the individual of an informal group who will ascend to the leader's role. The prediction made by use of the quantitative technique, was validated in the same manner as the assessment technique. In the assessment technique six groups were used and ten predictions were made for three physically different situations. In the quantitative technique ten groups were used and thirty predictions were made for the same three situations used in the assessment technique.

The results obtained by using these two techniques were compared to a chance selection of the leader. Their critical ratios were as follows:

The assessment technique CR- 11.02 significant at the
.01 level of confidence.

The quantitative technique CR- 4.91 significant at the
(for the bridge situation) .01 level of confidence.

The quantitative technique CR- equal to chance selection
(for the wreck and pit not significant.
situations)

Conclusions from this study are as follows:

1. Leadership in small informal military groups in specific situations appears to be a group process.
2. Individuals who have those attributes demanded by the situation to a greater degree than the other members of their groups tend to be leaders if they are sufficiently motivated to accept the leader's role.
3. Leadership seems to reside as a functional relationship between the individual and the other members of the group as indicated by the shift in leaders as the physical situation changes.

4. Correlation coefficients between scores on designated leadership and spontaneous leadership vary between a low positive and a very low negative.

5. Further development of methods of validation of the assessment technique is needed.

6. Further inquiry into the approach used in this study is needed.

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A STUDY OF INFORMAL LEADERSHIP OF SMALL MILITARY UNITS
IN SPECIFIC SITUATIONS

by

CHARLES FREDERICK HOUGHTON, JR.

B. S., Kansas State College
of Agriculture and Applied Science, 1947

AN ABSTRACT

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1951

ABSTRACT

The purpose of this study was the writer's desire to obtain a better understanding of group dynamics. The approach which the writer chose to accomplish this was through the study of leadership.

Studies of leadership have suggested that the situation is an important aspect in the study of leadership. This concept is of value and can be profitably used in the selection and determination of leaders. The Germans, the British, the Australians, and the Americans used this concept in their selection of officer candidates. However, very little has been done in the way of analyzing the situation with respect to the selection and determination of leaders. An analysis of the situation for which the individual is being selected is the basis on which to assess the individual.

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The problem of informal leadership of small military units in specific situations was studied. An exploratory approach to this problem was undertaken. Two procedures were followed in this study. An assessment technique was used as one procedure. This technique consisted of using qualitative data and quantitative data for the purpose of predicting the member of an informal group who will ascend to the leader's role. The

prediction was validated by an expert's judgment. The expert's judgment was based on his observation of the group in a situational problem. The other procedure employed a quantitative technique. Quantitative data were used exclusively in making a prediction of the individual of an informal group who will ascend to the leader's role. The prediction made by use of the quantitative technique, was validated in the same manner as the assessment technique. In the assessment technique six groups were used and ten predictions were made for three physically different situations. In the quantitative technique ten groups were used and thirty predictions were made for the same three situations used in the assessment technique.

The results obtained by using these two techniques were compared to a chance selection of the leader. Their critical ratios were as follows:

The assessment technique	CR- 11.02	significant at the .01 level of confidence.
The quantitative technique (for the bridge situation)	CR- 4.91	significant at the .01 level of confidence.
The quantitative technique (for the wreck and pit situations)	CR-	equal to chance selection not significant.

Conclusions from this study are as follows:

1. Leadership in small informal military groups in specific situations appears to be a group process.
2. Individuals who have those attributes demanded by the situation to a greater degree than the other members of their groups tend to be leaders if they are sufficiently motivated to accept the leader's role.

3. Leadership seems to reside as a functional relationship between the individual and the other members of the group as indicated by the shift in leaders as the physical situation changes.

4. Correlation coefficients between scores on designated leadership and spontaneous leadership vary between a low positive and a very low negative.

5. Further development of methods of validation of the assessment technique is needed.

6. Further inquiry into the approach used in this study is needed.