LEADERSHIP: A FUNCTION OF MESSAGE
CONTENT AND AMOUNT OF PARTICIPATION

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by
Myra Busch-Goetz, B.A.

The Ohio State University
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Approved by

[Signature]
Adviser

Department of Communication
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CHAPTER ONE

INTRODUCTION

The topic of this thesis is leadership in small discussion groups. Leadership can influence the attitudes, behavior and performance of group members, as well as help determine how effective the group will be. There are several assumptions underlying the selection of this topic for research. The first, stated above, is that leaders have a great amount of influence on the group of which they are a part. The second is that knowledge gained about leadership is necessary to improve group interaction and effectiveness. Conflicts caused by ineffective leadership can create dissatisfaction among group members and greatly decrease the cooperation and production of the group. The third assumption underlying this thesis is that there is no one best way to be a leader, and that different people and situations call for varying leader behaviors. The final assumption made is that virtually everyone has to deal with leadership in some form or another in daily living. Some people may be leaders, others may be nonleaders, and some may be some of each at different times. Leadership affects people in many very practical areas, including business, social and purposeful clubs, and daily life as affected by government leaders.
In addition to the very practical aspects of leadership justifying this study, there are some important gaps and concepts in leadership research calling for further study. Leadership research currently lacks a sound theoretical framework. Studies of leadership have in the past been concerned with the personality traits of the leader, the behavioral style of the leader, and the situation surrounding a group as it affects leadership. However, in these three broad areas of focus, inconsistent results have been the norm. When one trait appeared to be associated with leadership, its opposite often appeared also. Inconsistent behavioral aspects have also been found, and situations vary so widely it is difficult to make generalizations from them. All of these studies have made the assumption that their focus on personality, behavioral style, or situational variables will provide and explain the basic underpinnings of leadership. However, no one has actually attempted to determine the actual basis of leadership.

Before any sort of conclusive statements can be made about leadership, it is important to discover the basic correlates of leadership. To try to identify these leadership correlates, this thesis poses the question "Is perceived leadership significantly associated with person, with message content, or with amount of participation?"
CHAPTER TWO

REVIEW OF LITERATURE

In the late 1940's, Bales developed his Interaction Process Analysis (IPA), a system of behavior categories with which to analyze group interactions (1,2). This useful and relatively simple method for classifying the behaviors of group interaction became quite popular and is used frequently, although very rarely in unaltered form. Small group studies in general, and leadership studies in particular, have extensively used the system in some form, for at least a frame of reference. In his study (2), Bales hypothesized that groups proceed through several phases in the process of decision making, with different types of reactions predominating in each phase. This study was one of the earliest to view the group decision making process as different from individual decision making. One of the most important contributions made by Bales, however, was his use of the category system to study small group interaction.

The method used to study group problem solving by Bales was to tape group interactions, divide these interactions into thirds, and determine the ratios of types of behaviors happening in each section. These behaviors or reactions were coded through use of the category system, which has both task and social-emotional areas. Within the
task area, there can be both questions and attempted answers, while the social-emotional area can have both positive and negative responses. Within the task area, possible behaviors include:

1) giving or requesting suggestions
2) giving or requesting opinions
3) giving or requesting orientation.

Within the social-emotional area, there are also several possible types of behavior, including:

1) agreeing or disagreeing
2) showing tension or tension release
3) showing solidarity or showing antagonism.

Groups used in this study were given either full-fledged or truncated problems to solve. Those problems not requiring the three stages of orientation, evaluation and control were considered to be truncated. Some of the groups were laboratory groups gathered for this study alone, while others were already existing, functioning groups.

Bales found that the truncated, existing groups proceeded through the phases in the expected order. The novice, full-fledged groups reversed the order of the orientation and evaluation phases, while the existing, full-fledged groups reversed the order of the phases and behaviors predicted. Through counting of transpositions rather than actual numbers of events, and the use of Chi Squares for comparison, they obtained their predicted
results. Although Bales did not look specifically at leadership in his studies, the development of the category system for use in studying small groups is an important contribution to the study of leadership.

One important study using Bales' TPA as a beginning point was that done by Carter, Haythorn, Shriver (Siegel), and Lanzaeta in 1949 (3, 4). Under contract from the United States Navy, they investigated the question of what verbal behaviors make a leader different from other group members. The study was conducted with Naval ROTC men in an experimental situation. The researchers assumed there is some behavioral difference between behaviors of appointed and emergent leaders. They were interested in task leaders, and so constructed three types of tasks for each group to perform. Each group of eight performed the first set of tasks in leaderless (no assigned leader) groups.

The tasks the groups were asked to perform were separate ones, involving reasoning, mechanical assembly, and discussion. Leadership ability was rated by observers, based only on their general impressions of leadership, without the use of the category system developed for this study. The experimenters then separated the men into groups of four, with each group having members of roughly equal leadership ability. These smaller groups met to
perform the same three types of tasks, with no leader appointed by the experimenters. These sessions were labelled the emergent leader situations. The second time the group met, one member was withdrawn and replaced by another person of equal leadership ability. This new person was appointed leader by the experimenters, with no further discussion or clarification of his duties. Both these sessions were coded by two observers working independently of one another, using the fifty-three (53) item coding system developed for this study.

The overall classification categories they used included behaviors within seven broad areas:

1) showing personal feeling
2) proposing and initiating action
3) disagreeing and arguing in a negative way
4) leader roles in carrying out action
5) follower roles in carrying out action
6) non-productive behavior as far as solving the problem
7) miscellaneous.

Within each of the divisions there were from five to fifteen different behaviors assumed to be specific instances of these broad divisions (3, page 259). There is no discussion of what constitutes a unit of analysis, and these categories were used after the observers had determined who was the leader, to evaluate the performance of these perceived leaders and nonleaders.

The analysis was based on the ratings of the observers while the groups were meeting, without doing a statement-
by-statement analysis of the interaction. Carter et al determined the verbal behaviors of leaders, based on the category system, but determined who was the leader in the emergent situations simply by their overall impressions of "proper" leader behavior. The researchers also assumed that in the appointed leader situations, the appointed leader was the actual leader of the group. They explain that these decisions of who is the leader are "based on overall, global impressions of performance, not on a consideration of the detailed categorizations" (4, page 590).

Reliability among the observers using this system was checked by the correlation of the number of units of behavior for each category that each subject was awarded over a given period of time. They maintain that these scores should be comparable, although they are not based on precisely the same units. They did find that after seeing each group once or twice, there was much difficulty rating each trait independently. This, they feel, suggests the traits investigated might only be subdivisions within a larger personality concept.

Carter et al found that leaders, both appointed and emergent, did more diagnosing of the situation and giving of information than did the nonleaders. These findings, they say, "definitely imply" that leaders are more concerned with getting insight into or analyzing the
situation and initiating the required action. They also found that the behavior of the leader depended largely on the type of task at hand. There were some differences between the behaviors of emergent and appointed leaders. Emergent leaders showed greater amounts of activity than did the appointed leaders. The researchers speculated that this might be due to the emergent leader having to establish himself as leader, whereas the appointed leader does not have to prove himself to be leader, since that is already his given role.

The main problems with this study seem to be the lack of input by the group members themselves about who was the leader of the group, the vagueness in conceptualizing leadership, and the lack of specification of what constitutes a unit of analysis and how this is to be categorized. They did not ask the group members who the leader was in each group, and more importantly, did not have common criteria for selecting the leader themselves. Even with no formalized criteria for determining the leader, they proceeded to analyze the behaviors that made the observer-perceived leader different from other group members. The researchers had difficulty overcoming the halo effect after becoming familiar with the subjects, which indicates that at least the observers based their perceptions of leadership on person rather than on content, as specified by the
behavioral categories. Without letting the categories determine the leader in each group, and without a solid definition of leadership, it is difficult to make valid conclusions about leaders and how they behave.

Crockett (5) investigated differences between emergent and official leaders. He hypothesized that emergent leaders would be found more in groups with divergent interests, would express a high degree of self-oriented needs and occupy positions within the larger organization that are influenced by the decisions being made, and would be found more often in groups where official leaders do not perform leadership functions. Crockett defines the leader as the "group member who directs the group's behavior." Conferences within businesses and government organizations were observed. An eleven category classification system was used to rate behavior. These categories included:

1) goal-setting, both procedural and content
2) problem solving
3) information seeking
4) information giving
5) solution proposing
6) development seeking, determine implications of previous input, get clarification
7) development giving
8) opposing
9) supporting
10) summarizing
11) non-problem directed.

Divergence of opinion, expertness, participation rate, motivation to be leader and acceptance were also rated by
the observers.

These ratings, made by four observers, were made right after the meetings and were pooled, with the mean ratings take as the rating used for analysis. The observers also rated the groups as to the presence or absence of cliques. The official leaders ranked all members on position and expertness. Involvement in the task was ascertained by having group members rate the extent of their stakes in the outcome. Ego-involvement was determined by coding units of expression of self-oriented needs. Each member also ranked each other member in terms of acceptance or "neededness."

Over half the groups had a leader in addition to the designated leader. The emergent leaders were evenly divided as to having high participation rates, and many members had high participation rates without being leaders. Emergent leaders were found more often when the designated leader did not do much in the problem-solving category, and when groups had divergent opinions and cliques. Emergent leaders also were above the median in position and expertise, had more ego involvement in the decision being made and were ranked by the group as more needed. They feel these results occurred largely because these groups were relatively permanent and intact, with greater role differentiation having occurred.
Crockett, although looking at a slightly different aspect of leadership than Carter et al., did add several important measurements. The input by group members serves well to validate the categorizations and interpretations made by the observers and coders. Leadership is defined in this study, but the definition is vague— one can direct the group's behavior in several ways, either through content or through procedure. The assumption appears to be that the leader is a task-oriented leader, rather than social-emotional.

Others interested in leadership characteristics include Kirchert, Lodahl, and Haire (8), who in 1959 conducted a study concerned with the relationships between amount of participation, frequency of task-oriented and group-oriented interaction and the selection of leaders by other group members. The design was similar to that used by Carter et al. Groups of three people each had twenty minutes to discuss a human relations type problem, after which they were asked to select a representative to attend a second meeting. Tapes were made and analyzed with a modified IPA format, tempered by the classification system used by Carter et al. They had three main categories, which were:

1) giving suggestions
2) asking for suggestions
3) summing up or integrating.
Along with this, they tallied the amount of participation of each member. They felt the integration scores in these categories would enable them to predict who would be chosen as representative by the group. In this design, the representative was assumed to be the leader of the group.

Kirsch et al found an interaction between the categories and amount of participation, with neither high correlation nor complete independence. The emphasis on the categories was not the same for all groups. They found that generally the leaders had a high rate of participation, although not always. The leaders tended to be task-oriented, specified the problem suggested courses of action, while seeking out members' contributions and integrating these and the proposed solutions to reach consensus. These results corroborate those of Carter et al, in what Kirsch et al call both Carter's positive and his negative results. There is a difference in the behavior of leaders, but such things as the "expression of agreement, personal feelings, and disagreement did not reliably differentiate emergent leaders from nonleaders" (8, page 408).

An important aspect of this design is the inclusion of the members' opinions of who was the leader of the group. In this way, they were limiting the amount of observer inference about the leader and the proper behaviors
for a leader. They could evaluate the leader's behavior and how it is different from that of nonleaders in the group. Also, they defined their unit of analysis, increasing the likelihood of reliability among the observers. This helps clarify what behaviors the observers were looking for and finding, and does allow a way to compare interpretations of what a given unit was and what it accomplished. The experimenters determined who the leader was and operationalized this by who was selected to attend the second meeting. While they classify the behaviors of this person, they had no way of determining whether members picked him on the basis of what he did or on who he was.

Another study done to determine behavioral differences of leaders and nonleaders was that of Morris and Hackman in 1969 (12). While this study is similar to those discussed above, there are some important differences. The first is, once more, the input obtained from group members as to who they perceived as leader. They reasoned that the leader had to be the one seen as such by the group, so they termed the leader that person who had the highest total rating on the item of their questionnaire "he was the real leader of the group." They also determined that since many studies found that leaders participate more than nonleaders, it naturally followed that leaders ex-
hibit more behaviors of a given type because they exhibit more behaviors of all kinds. If they participated more, they simply had to do more of the looked-for behaviors.

Morris and Hackman had roughly the same three types of tasks as Carter et al, but added another variable - level of task difficulty. They assigned leaders in all groups, but did not clarify the duties and responsibilities of this individual. Observers taped the sessions and kept track of who talked when. After completing the task, which required a written decision, group members completed a Behavior Description Questionnaire (BDQ) and another post-meeting questionnaire. The BDQ had sixteen statements, each of which was marked on a 1 (not at all true) to 5 (very true) scale.

The coding into behavioral categories, which can be found in the Appendix, page 85, was done by the observers and the correction for overall rate of participation was made by determining the percentage of each subjects' activity devoted to each category. Group effectiveness was determined by judging the quality of written statements from each group, which was done by 25 judges. High and low participation were determined according to whether the amount of participation of each individual was above or below the mean, as was leadership. Their results were largely similar to those of Carter et al, Crockett, and Kirchert et al.
except for the important finding that "once the effect of
total activity is removed, it is startling how few sig-
nificant differences remain between the behavior of leaders
and non-leaders" (12, page 359). Both leaders and nonleaders
put the same relative emphasis on categories within this
system, which is contrary to the results of many other
studies. The distinctions in this study between content
and person were clearer because the types of behaviors
listed were more specifically task-oriented, but repre-
sentative of typical behaviors in such situations. They
did not fall into the trap of analyzing the behavior of an
assumed leader, with no verification from group members.

Richards and Cuffe (11) investigated the behavior of
leaders by focusing more on effectiveness and the situation
or characteristic mood of the group. They wanted to
determine whether leaders behaved differently in inter-
active groups (with members encouraging each other and
working together) than in counteractive groups (members
struggling against one another for individual gain). They
were also interested in whether these conceptualizations
were valid when operationalized. A leader was assigned
to each group after an initial eight minute discussion.
This leader was selected on the basis of Bales' IPA, a
7-point scale of leader effectiveness, and amount of
participation. They then used Bales' IPA to analyze the
interactions in the contrived situation.

They found that leaders in interacting situations made more suggestions, gave more orientation and were helped to be better leaders by group members. The leaders in the counteracting situations showed more solidarity than the other leaders. These results, of course, are based on the assumption that they considered the leaders to be the same people the group members did. Again, there was no input from the members concerning who they thought was the leader. The observers simply assumed that the appointed leader did in actuality perform as leader. They have lent support, in a specific way, to the finding of Carter et al., that leaders behave differently in different situations.

The category system of Carter et al was used as a starting point in a study done by Valentine and Fisher (15) to study verbal innovative deviance (VID) in small group interaction. While this study does not focus specifically on leadership, it does use roughly the same method of categorizing members' behaviors, with an important modification for analysis of the data. They analyze the groups' interactions with both static and contiguity analysis. Static analysis is the method used in the studies above; simply determining the frequency of certain types of acts in a given interaction. Interaction analysis,
on the other hand, looks at the sequence of two acts as they appear in the pattern of interaction. They clearly defined a unit of analysis as an individual's uninterrupted utterance, or the crossing of categories within an individual's uninterrupted utterance.

The key change they advocate is looking at the pattern of interaction within which a unit is found rather than taking each unit in isolation from the rest. In this way, it is somewhat easier to determine what the effect or intent of a comment is, since it is considered in context. Again, they are not studying leadership, but in studying deviance they are looking for differences in behaviors of group members. Although there is again the flaw of not determining from member input what went on, the use of interaction or contiguity analysis helps somewhat to overcome this, by looking at specific patterns surrounding a behavior or comment. This study indicates that the method of analysis through categories is useful to many areas of small group studies, and with modification can be made even more useful.

Several attempts have been made to study leader behavior and its effects on groups outside the laboratory. One such study is that done by Teasdale and Joynt (14), concerning the group behavior of a work-study group of mentally retarded youths. Although this study was not
done in the lab, they did to some extent vary the incentives for each person and watch the subsequent interaction. They also used the category system of Carter et al. to develop their own, focusing primarily on aggressive behaviors. These included:

1) opposition or criticism
2) disapproval of another
3) attacking another's status
4) a bald command
5) denial of permission
6) showing anger
7) arguing with another.

This study shows the versatility of category systems for studying behavior of group members, both in the lab and in the field by indicating that the category system can be used in an ongoing, unobtrusive manner.

Larson in 1971 (9) investigated the differences in verbal responses of groups with and without leaders. He reasoned that the one way to learn more about groups, leadership and communication is to look at the reactions of groups to leaders. Fourteen initially leaderless groups met for at least four sessions, with group life ranging from two to four hours. The groups had 7-9 members and were given the assignment of preparing and presenting a written and oral report focusing on a problem of concern to them. Both classroom and non-classroom groups were used. For analysis, the groups were split into two types, stable (having a leader) and unstable (having no leader).
The two types of groups were then compared as to:

1) attention span
2) effect of leader or nonleader on attention span
3) type of theme they spent most time on
4) amount of time spent on a theme introduced by the leader.

The frequency and duration of discussion themes was quantified with the use of the "Berg Time-Devoted-to-Themes Instrument." Also identified with this instrument are the initiator and interrupters of themes. The themes used are:

1) substantive - group topic
2) procedural - methods group is or should be using
3) irrelevant - anything unrelated to the formal task
4) disruptive - not themes at all (shouting, group talking, etc.)

Group members were also presented with the Geier Role Prediction Instrument, which asks group members to predict who will assume the roles of leader, critical thinker, informer and lieutenant. Afterwards, the group members note who contended for each role and justify their choices.

The results of this study indicated that the stable groups (those with an emergent leader) spent more time on substantive (topic) themes and less on procedural and irrelevant themes than groups with no leaders. Leaders dominated more than other members, more time was devoted to topics introduced by the leader, and the leaders introduced more themes than did other members. The last con-
Conclusions support the contention of Morris and Hackman (12) that leaders differ from other group members mostly in amount of participation. More time is devoted to leader-introduced themes, perhaps because the introduced more. Larson concluded "in short, leaders tend to talk more than non-leaders, and the group responds by spending a relatively large amount of time on topics suggested by the leader" (9, page 181).

Some studies have accepted this finding of leaders having higher participation rates to the extent of using participation rate as a basis for defining leadership and measuring leader behavior. Lashbrook (10) investigated leadership to find what "perceived characteristics discriminate between leaders and nonleaders in a small group situation?" The emphasis of this study was on perceived leadership characteristics. Members of the groups studied were given Likert-type scales to evaluate each other group member along several dimensions gleaned from previous research. Group life consisted of fifteen 55-minute periods, and these evaluations were completed after three work periods. Group members were high school students assigned to groups at random, with four to six students per group. Each group was observed for ten minutes three times, with these interactions analyzed with the PROANA 5.

The PROANA 5 is a computer program which determines amount of communication as well as distinguishing between
"interactive and nonpatterned communication." Lashbrook extended the findings of several researchers indicating amount of communication to be the behavior most indicative of leaders. She said "the individual who interactions most with a majority of group members over three equal time periods is classified as a leader" (10, page 310). The entire study is based on the assumption that this is a reliable indicator of leadership. The results showed that there were six factors influential in determining the leader of a group. These were:

1) sociability
2) extroversion
3) composure
4) competence
5) homophily
6) character.

In this situation, power and competence collapsed into one dimension. Lashbrook suggested that with different situations, this might separate, since power implies authority and competence implies expertise.

In an interesting combination of looking at leadership through person and participation rate, Stang (13) hypothesized that liking ratings of leaders by group members are carvilinearly related to interaction rate. He investigated this by having scripts read to undergraduate women. The parts were of noticeably different length, and each part was alternated among the readers. Subjects were asked to rate each of the three speakers on a 7-point
scale concerning:

1) how much do you think you would like each speaker?
2) how important do you think each person is in leading the group (of readers)?
3) rate each on leadership ability in general.

He found that speakers were liked better when reading the medium length part than either the long or short, that speakers were seen as showing more leadership within the group with the long part, and that speakers were seen as showing more leadership in general with the long part. Thus, quantity of speech can influence liking and leadership ratings, perhaps because of social norms concerning the proper amount to talk. Stang suggested that perhaps the act of speaking is temporary leadership, so the longer one talks, the more leadership, or control they have.

In summary, many leadership studies in the past have begun with the intent of determining what behaviors, or content, make leaders different from nonleaders. Several among these have found that content is perhaps not easily distinguished from person. Among these are Carter, Maythorn, Shriver (Mierowitz), and Lanzetta, who looked for and found behavioral differences between leaders and other group members, but because of researcher inability to rate traits independently, were forced to conclude that perhaps their results were due to some larger personality concept
A similar problem occurs in the study done by Kirsch, Lodahl and Maire (8), in which they operation-
alized leadership as the representative selected to attend a second meeting. Here again, it is difficult to determine whether group members were responding to the personality of the representative or to the content input contributed by this member. It seems quite likely that people would select a representative on a different basis, such as personality, than they might use to select someone to guide and lead their meetings and take responsibilities for ongoing functioning. In the latter instance, expertise and directive input, or content, might be more likely to serve as the selection criteria.

Lashbrook (10) found six distinguishing factors of leaders, several of which arise more clearly from personal aspects than from content or task aspects. These person-
related concepts include sociability, extroversion, composure, homophily and character. These are five of her six distinguishing characteristics, which argues strongly for leadership as a function of person. Stang (13) correlated liking with the participation rate of group members. Liking can as easily be seen as a function of person as of content, and he found that liking is curvilinearly related to participation and that those who participate more are seen as the leader.
Another variable that has been looked at and most consistently found to be related to leadership is the amount of participation. Although not all agree, many indications are that leaders participate more than other group members. Morris and Hackman (12) realized the frequency of this finding and determined that once participation rate is corrected for, leaders put the same relative emphasis on categories as do nonleaders. Crockett (5) found that leaders did not have consistently high rates of participation. Leaders were evenly split on this dimension, and many group members had high participation without being leaders. Kirscht, Lodahl and Haire (8) concur with this in their finding that there is a high interaction between category use and amount of participation, but this is neither a strong correlation nor completely independent. They found that generally, although not always, leaders had high rates of participation. Lashbrook (10) is so strongly convinced that leaders can be identified by high rates of participation that she based her entire study on the identification of leaders through participation only. Larson (9) also follows this general trend, concluding that leaders differ from nonleaders mostly in amount of participation. Stang (13) in his study investigating amount of liking as related to amount of participation, equates speaking with influence, an
important aspect of leadership. Thus, he says, the more you speak, the more control you have (up to a point).

Perhaps one of the most common bases for the study of leadership is looking at the content input of group members and analyzing these to determine any differences between leaders and nonleaders. Carter et al (3,4) found that leaders tended to do more diagnosing and giving of information, and were more concerned with getting insight into the situation. Also, they were concerned with initiating the required action. Crockett (5) in his comparison of emergent and designated leaders, found that emergent leaders appeared more frequently when the designated leader did not do much problem-solving behavior, and when the group split into factions. He also found that emergent leaders had more expertise, ego-involvement in the decision, and were seen by the group as more needed than other members. Kirscht et al (6) determined that leaders are task-oriented, specify the problem, suggest action, seek member contributions and integrate these with proposed solutions to reach consensus. They also found that agreement, disagreement and the expression of personal feelings did not reliably differentiate leaders from nonleaders. Richards and Cuffe (11) compared leaders in different group situations, and found that leaders in interacting (cooperative) situations made more sug-
gestions and gave more orientation, while leaders in counteracting (competitive) situations showed more solidarity. Larson (9) found that leaders introduced more themes than other members, and that groups with leaders spent more time on content themes and less on procedural and irrelevant themes than did groups with no leaders.

In viewing these often conflicting findings, it is apparent that there are differences between leaders and nonleaders. What is not apparent is whether these differences lie in the realm of person, amount of participation, or content input. With this distinction still undetermined, it is too easy for basic errors of assumptions to be made in continuing the study of leadership. Since leadership is of such prevalent interest, both in research studies and in daily affairs, and since it is likely that research in this area will continue, it is critical that the question of what constitutes leadership be answered. If it is not, erroneous assumptions and suggestions will continue to be made, flooding the area of leadership study with ever more studies based on an infirm foundation. It is in an effort to strengthen this foundation that this study has been undertaken. Thus, the question for this thesis is:

"Is perceived leadership significantly associated with person, with message content, or with amount of participation?"
METHODOLOGY

Four previously existing classroom task force groups were selected for observation. These groups were members of the Communication 110 class at Ohio State University, Spring Quarter, 1975, a freshman level small group communication class. They were "freed" from class attendance to gather data for a class project. The groups, with five members each, met during their regularly scheduled class time. Each group was given an ambiguous story, told to rank characters, and to come to consensus during their discussion, which was video- and audio-taped for later use. Three groups were given the same story (see Appendix, pages 80-1), while the fourth group was given a similar story (see Appendix, page 82). The story given to the fourth group was used first, and was felt to have less potential as a discussion problem. The types of stories and instructions (see Figure 2, page 32) were similar for all groups.

All groups were told to take as much time as they needed to reach consensus. An opportunity was provided for the subjects to ask questions of the experimenters, read the story, and become accustomed to the cameras and taping. All groups began the discussion when members had read the story, had done an individual ranking of the
characters and were ready for the group discussion. The assignment and discussion were considered complete when group members reached agreement on the ranking of the characters. At this point, questionnaires were distributed to group members. The questionnaire had some highly personal evaluations of group member characteristics, including physical attraction, liking, and competence. The questionnaire is included in the Appendix, pages 83-84.

For this reason, the group was separated so members could not see the responses of other members. At all points, subjects were told that if they were too uncomfortable about a question or the topic of discussion, to omit the question or refrain from the discussion. None of the subjects expressed any discomfort, and all completed the questionnaire and were involved in the discussions. All subjects seemed interested in the discussion problems and participated actively.

After the questionnaire was completed, members were taken to the audience response laboratory and shown the video-tape of their group discussion. The audience response laboratory is a room equipped with a television set, easy chairs and a sofa, and individual, hand-held response button sets. The response buttons were connected with a portable computer terminal, which recorded their responses at approximately one set of response prints per second.
This response button and computer combination is referred to as the Audience Response Machine (ARM). The subjects were asked to indicate on the response buttons the degree to which they were being influenced at a given time of the discussion. After this was completed, the groups were thanked and dismissed. The subjects were then finished with their contribution to this study. The experimenters then did content analysis of the group interactions through the use of partial transcripts (first and last few words of an utterance) of the groups' discussions and coding of these utterances. The category system developed by Morris and Hackman (12) was used for this study. This category system can be found in the Appendix, page 85.

The next step in this study was the correlation of the transcripts and coding with the responses recorded on the Audience Response Machine (ARM). Once the ARM printouts were divided into utterances as determined by the transcripts, scores could then be calculated by person and by content. This was done by determining the groups' mean responses to a coded utterance, noting the speaker and category used at that time. These were then analyzed to discover whether the ARM responses were associated with the speaker or with the categories used. In this way, a continuous record of subjects' degree of influence was obtained.

Data for this study was thus gathered from three main
GROUP MEMBERS' PERCEPTIONS

Subjects filled out a questionnaire immediately upon completion of the group discussion. This questionnaire, which was constructed by the experimenters, was one and one-half pages long, and included questions concerning a ranking of group members on such characteristics as physical attractiveness, persuasiveness, intelligence, honesty and overall goodness. This was the first page of the questionnaire and was used to guide the members to a readiness to answer questions and evaluate group members. In this sense, these questions were largely probes, meant to provoke thought concerning attributes of the other members and themselves in this interaction. Members were assigned numbers so names did not have to be used here, in an attempt to prevent any possibly hurt feelings. Also, during completion of this questionnaire, members were separated so they could not reach each other’s responses. They were assured that these results were absolutely confidential and would be used only to aid us in our study. The key questions for our study were located on the second page of the questionnaire. The four primary questions

ources - group members' perceptions, content analysis, and the results of the Audience Response Machine. Each of these will next be discussed in depth.
used for our analysis are displayed in Figure 1. These key statements were interspersed with other statements concerning similarities and amount of liking among group members.

The questionnaires were used to gain the immediate feelings and impressions of subjects. In order to avoid comparing only experimenter-perceived leaders and nonleaders, the responses to the four questions in Figure 1 were tallied to determine member-perceived leaders and nonleaders. This enabled the experimenters to maintain a record of the subjects' immediate perceptions and evaluations. All questionnaires were labelled as to group and group member responding. This also provided a cross-check on the Audience Response Machine scores, another indication of which members were seen as most and as least influential.

AUDIENCE RESPONSE MACHINE (ARM)

As discussed above, groups were taken to the audience response laboratory, where the tape of their discussion was replayed for them. Simultaneously, members were asked to push response buttons indicating the extent to which they were influenced at that point in the discussion. The instructions given to the subjects are found in Figure
FIGURE 1

1) Overall, I perceived the leader of our group to be member number ______.

2) Overall, I perceived member number ______ to be the most influential to our task.

3) I believe member number ______ was the most persuasive in my decisions during our task.

4) ______ was the least influential to our task.

KEY MEMBER PERCEPTION QUESTIONS
2. For purposes of analysis, these responses were con-
verted to numerical scores, with A equivalent to 5 and
E equivalent to 1. These responses were printed at
approximately one printout per second. In this way, we
obtained a continuous record of subjects' influence during
the discussion. While subjects were responding, the
experimenters were using the same type of response buttons
to indicate speaker. This was to serve as a double-check
on our partial transcript record, which also indicated
speaker.

CONTENT ANALYSIS

Once the subjects were dismissed, partial transcripts
of the discussions were made, with the first few words
and the last few words of each utterance recorded. In
this way, it was possible to keep track of utterances
without a fully-worded, complete transcript. This made
it particularly easy to replay the tape and follow the
discussion to complete the coding. This transcription
and coding process took place over a six-month period.
Three coders were used, and worked independently.*

* Coders were Debra Greene-Lowe, Victor Wall, and the author.
FIGURE 2

You are about to see the tape of the discussion you just completed. Please try to respond in the way you felt at the time of the discussion. Press the buttons indicating the amount you were being influenced at the time. Use the buttons as follows:

A = Very Positively Influenced
B = Positively Influenced
C = Little or No Influence
D = Negatively Influenced
E = Very Negatively Influenced

(A poster with this chart was displayed throughout this portion of the study.)

Do not feel that you have to change the buttons often, or that you must hold one response for a certain amount of time. Are there any questions? ...

Let's practice this.

AUDIENCE RESPONSE MACHINE INSTRUCTIONS
Where discrepancies occurred, coders came together to reach agreement on the category. When there was agreement of at least two coders, the utterance was considered to be properly coded.

The category system used was developed by Morris and Hackman in their study of leadership in 1969 (12). This category system has sixteen categories, describing task functions, and is found in the Appendix, page 85. The system was centered around two broad categories within which the others were included. These two were "Structures Answer" and "Structures Problem." Because of their generality and inclusiveness, we omitted these from our coding. The use of the partial transcript ensured that all coders were coding the same utterances. Since speaker was also marked from the repeated viewing of the videotapes, this was felt to be more accurate than the instantaneous indicators of speaker in the audience response lab. In cases of disagreement, the transcript-named speaker took precedence.

The categories in this system are not mutually exclusive, but the authors do recommend that one statement not be coded into more than three functions. Thus, a single statement can be seen as serving more than one purpose or function, but not more than three simultaneously. Morris and Hackman did find that roughly 75% of the acts
in their study were classified into only one category, and 25% into two categories. Since the unit of analysis is the accomplishment of a function, coding an utterance into more than two to three categories indicates too large an utterance has been used. After some consideration, in this study, multiple codings were assigned to single categories according to the predominant function of that statement. This collapsing was done based on which function within a coded utterance was more specific, and in some cases, on the type of utterance it preceded. These coding reassignments can be found in the Appendix, Page 86.

Once the data were arranged and displayed according to categories, it became apparent that many empty cells existed because of the large number of categories (15 after expansion due to frequent multiple categories). This large number of empty cells prevented conducting effective analyses of variance. For this reason, the category system was revised by collapsing it into seven categories (see Appendix, Page 87). This greatly reduced the frequency of empty cells, although not eliminating them entirely. The category system was revised by combining categories into broader, more inclusive categories (see Figure 3).
<table>
<thead>
<tr>
<th>New Category</th>
<th>Old Category(ies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Solution Proposal</td>
<td>3 - Propose Solutions</td>
</tr>
<tr>
<td>2 - Idea Generation</td>
<td>4 - Clarify</td>
</tr>
<tr>
<td>3 - General Agreement</td>
<td>5 - Defend</td>
</tr>
<tr>
<td>4 - General Disagreement</td>
<td>6 - Repeat</td>
</tr>
<tr>
<td>5 - Seeking</td>
<td>7 - Agree</td>
</tr>
<tr>
<td>6 - Procedural</td>
<td>8 - Disagree</td>
</tr>
<tr>
<td>7 - Irrelevant &amp; Fragmentary</td>
<td>9 - Seek Structuring</td>
</tr>
<tr>
<td></td>
<td>10 - Seek Solution Proposals</td>
</tr>
<tr>
<td></td>
<td>11 - Seek - Clarify - Defend - Repeat</td>
</tr>
<tr>
<td></td>
<td>12 - Seek Evaluation</td>
</tr>
<tr>
<td></td>
<td>13 - Procedure</td>
</tr>
<tr>
<td></td>
<td>14 - Seek Procedure</td>
</tr>
<tr>
<td></td>
<td>15 - Irrelevant</td>
</tr>
<tr>
<td></td>
<td>16 - Fragmentary</td>
</tr>
</tbody>
</table>

**DEVELOPMENT OF NEW CATEGORY SYSTEM**
DATA ANALYSIS

Once the new category system was developed, the next step was to determine high and low influencers based on two sources. These were (A) member perceptions of leadership as found on the questionnaires and (B) member Audience Response Machine (ARM) responses to utterances during the stimulated recall process described above. From these sources of data, group members were to be ranked in terms of their relative influence during the discussion task.

Member perceptions of leadership were determined by tallying the responses of group members to the four questions shown in Figure 1. The member most frequently mentioned in the first three questions was ranked first, the next most frequently mentioned member second, and so forth. The question concerning the least influential member was used as a cross-check in determining the lowest ranking member. Cases of ties were broken randomly.

The ranking of members according to the ARM responses was achieved by collapsing all the response scores across categories and determining a within-group mean ARM response score for each group member. Again, these scores were determined by converting the alphabetic responses to numerical scores, with A the highest at 5 and E lowest at 1. These means were then rank ordered from high to low,
yielding an indication of the relative influence of each group member.

The research question was then to be directly addressed by submitting the data to two-way analyses of variance to determine if there were (A) significant differences in the amount of influence exerted by each member, as perceived by other group members, (B) significant differences in the use of categories (the new collapsed categories), and (C) interactions between speaker and category use. Specifically, two sets of two analyses each were to be run. The first, with members ranked according to questionnaire responses, would be conducted in two ways. The first of these would compare only the top and bottom single influencers from each group, and the second would compare the top and bottom two influencers from each group. The second set of analyses would use the rankings of subjects according to ARI scores, and conduct one analysis with top and bottom single influencers and the other with top and bottom double (two) influencers. These analyses were conducted to determine differential amounts of influence as well as category use between leaders and nonleaders.

Finally, the research question required a comparison of the frequency of participation between the high and low influencers. Specifically, this would involve a Chi Square analysis of the amount of participation for
(A) high and low, both single and double, influencers according to Member Perceptions from the questionnaire and (B) high and low, both single and double, influencers according to the ARM ratings.
RESULTS

Once group members were ranked according to both member perceptions on questionnaire and ABC ratings, analyses of variance were conducted to determine whether influence was more strongly associated with person or with content. The research question also called for Chi Square analyses to determine frequency, or amount of participation.

In determining the most and least influential participants based on the member perceptions as found in the questionnaire, there was often a general agreement among members. The results of this tally are displayed in Figure 4, page 41. In only one group were more than two

FIGURE 4 ABOUT HERE

people mentioned as being the leader of the group. This was the question which received the most consistent results within a group. It appeared to be somewhat harder to agree on the most influential, most persuasive and least influential. However, in considering the first three items, it was fairly easy to reach a ranking of the members according to influence. Two ties occurred, both at the level of third most influential or below. Both were broken randomly. In no group was there any difficulty in
**FIGURE 4**

<table>
<thead>
<tr>
<th>GROUP #1</th>
<th>THOSE NAMED</th>
<th>FINAL RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>1 1 1 1 1 1</td>
<td>1st = 1</td>
</tr>
<tr>
<td>Most Influential</td>
<td>2 1 3 1 3 3</td>
<td>2nd = 3</td>
</tr>
<tr>
<td>Most Persuasive</td>
<td>3 1 &amp; 2 1 3 3</td>
<td>3rd = 2</td>
</tr>
<tr>
<td>Least Influential</td>
<td>5 5 5 5 5 5</td>
<td>4th = 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5th = 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP #2</th>
<th>THOSE NAMED</th>
<th>FINAL RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>2 2 2 2 2 2</td>
<td>1st = 2</td>
</tr>
<tr>
<td>Most Influential</td>
<td>2 3 5 2 2 5</td>
<td>2nd = 5</td>
</tr>
<tr>
<td>Most Persuasive</td>
<td>2 4 1 1 1 3</td>
<td>3rd = 3</td>
</tr>
<tr>
<td>Least Influential</td>
<td>4 4 1 1 1 3</td>
<td>4th = 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5th = 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP #3</th>
<th>THOSE NAMED</th>
<th>FINAL RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>4 1 3 4 3 3</td>
<td>1st = 3</td>
</tr>
<tr>
<td>Most Influential</td>
<td>4 1 3 3 3 3</td>
<td>2nd = 4</td>
</tr>
<tr>
<td>Most Persuasive</td>
<td>3 3 5 3 3 4</td>
<td>3rd = 1</td>
</tr>
<tr>
<td>Least Influential</td>
<td>2 4 2 2 2 2</td>
<td>4th = 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5th = 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP #4</th>
<th>THOSE NAMED</th>
<th>FINAL RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>4 5 4 4 4 4</td>
<td>1st = 4</td>
</tr>
<tr>
<td>Most Influential</td>
<td>4 4 4 4 4 3</td>
<td>2nd = 5</td>
</tr>
<tr>
<td>Most Persuasive</td>
<td>4 5 2 5 4 4</td>
<td>3rd = 3</td>
</tr>
<tr>
<td>Least Influential</td>
<td>2 2 4 1 1 1</td>
<td>4th = 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5th = 1</td>
</tr>
</tbody>
</table>

TALLY AND RANKING OF MEMBERS 
according to 4 Key Questions on Questionnaire
(See Figure 1, page 31 for these Questions)
in naming the most influential member; in all cases, one member was mentioned in the first three items far more frequently than any other member.

Subjects were then also ranked according to amount of influence as indicated by the ARM responses. Scores were collapsed across the content categories, revealing influence ratings for each subject. Although these ratings varied in range from group to group, within groups, the ratings were similar in range. Figure 5, page 43, illustrates these scores and rankings within groups. Again, as

FIGURE 5 ABOUT HERE

with ratings by Member Perceptions from the questionnaire, there are clear and distinct differences in influence wielded by each member. As will be discussed below, the differences between high and low influencers as determined by the ARM ratings are significant.

It is interesting to note the similarities and differences between subject rankings according to Member Perceptions from the questionnaire and the ARM ratings. In some cases, the ranks are the same, in others they are slightly different, and in several, they are directly opposed. This comparison is displayed in Figure 6, page 44.

FIGURE 6 ABOUT HERE
<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>ARM SCORE</th>
<th>ARM RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROUP #1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.8619</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3.8503</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3.8729</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3.8067</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>3.6633</td>
<td>5</td>
</tr>
<tr>
<td><strong>GROUP #2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.6553</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3.5770</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>3.5795</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3.5017</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>3.4492</td>
<td>5</td>
</tr>
<tr>
<td><strong>GROUP #3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.7433</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3.8000</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3.8179</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>3.8772</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>3.7271</td>
<td>4</td>
</tr>
<tr>
<td><strong>GROUP #4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.3871</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3.1323</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3.0107</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>3.1324</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3.2011</td>
<td>2</td>
</tr>
</tbody>
</table>

**ARM SCORES AND RANKINGS**

Within Groups, Collapsed Across Categories
### Figure 6

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>RANK-ARM</th>
<th>RANK-QUESTIONNAIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP #1</td>
<td>1 2 3 4 5</td>
<td>3 1 4 5 5</td>
</tr>
<tr>
<td>GROUP #2</td>
<td>1 2 3 4 5</td>
<td>1 3 2 4 5</td>
</tr>
<tr>
<td>GROUP #3</td>
<td>1 2 3 5</td>
<td>3 2 5 4</td>
</tr>
<tr>
<td>GROUP #4</td>
<td>1 2 3 4 5</td>
<td>4 5 3 2</td>
</tr>
</tbody>
</table>

**Comparison of Rankings**

Obtained from Audience Response Machine (ARM) and from Key Questions on Questionnaire.
This indicates that in some instances, people evaluate leadership in global terms differently than they do in a continuous, item-by-item evaluation. This will be discussed further below.

The first series of analyses of variance was conducted using the Member Perception from questionnaire rankings of group members. The first of these was done using only the single most and single least influential members. Table 1, page 46, contains a summary of the data for this analysis, while Table 2, page 47, details the results of this analysis. The results of this showed no significant differences between high and low influence members as indicated by ARM scores. Subjects revealed no important differences in influence exerted simply on the basis of who is doing the talking. This can be understood by looking at the interaction results of this test. Since "high" influence people, as determined by questionnaire responses, are not consistently receiving higher ARM scores, there is apparently another important variable having an impact upon the influence a person exerts. Since the main effect of categories on influence ratings was significant, it seems that there are differences in the perceived influence of categories. Some categories seem to generate higher levels of influence than others. There was also a significant interaction effect found in this analysis.
TABLE 1

<table>
<thead>
<tr>
<th></th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Influencers</td>
<td>N = 33</td>
<td>85</td>
<td>38</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>( \Sigma X = 113 )</td>
<td>290.1</td>
<td>138.3</td>
<td>128.2</td>
<td>43.86</td>
</tr>
<tr>
<td></td>
<td>( \Sigma X^2 = 394 )</td>
<td>1003.93</td>
<td>511.27</td>
<td>420.36</td>
<td>143.86</td>
</tr>
<tr>
<td></td>
<td>SD = .4697</td>
<td>.4058</td>
<td>.4630</td>
<td>.5253</td>
<td>.3685</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Influencers</td>
<td>N = 6</td>
<td>8</td>
<td>15</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>( \Sigma X = 21.5 )</td>
<td>27</td>
<td>55</td>
<td>31.1</td>
<td>13.1</td>
</tr>
<tr>
<td></td>
<td>( \Sigma X^2 = 77.51 )</td>
<td>92.2</td>
<td>204.54</td>
<td>108.31</td>
<td>43.45</td>
</tr>
<tr>
<td></td>
<td>( R = 3.5832 )</td>
<td>3.3750</td>
<td>3.6667</td>
<td>3.4556</td>
<td>3.2750</td>
</tr>
<tr>
<td></td>
<td>SD = .3061</td>
<td>.3919</td>
<td>.1853</td>
<td>.3245</td>
<td>.4272</td>
</tr>
</tbody>
</table>

DATA SUMMARY FOR TABLE 2

High and Low Single Influencers - Ranks based on Member Perceptions on Questionnaire.

Categories 5 and 7 omitted.
### TABLE 2

<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>df</th>
<th>S.S.</th>
<th>M.S.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Low People (A)</td>
<td>1</td>
<td>.0152</td>
<td>.0152</td>
<td>.8736</td>
</tr>
<tr>
<td>Category (B)</td>
<td>4</td>
<td>.1697</td>
<td>.0424</td>
<td>2.4368 (.05)</td>
</tr>
<tr>
<td>A x B</td>
<td>4</td>
<td>.2177</td>
<td>.0544</td>
<td>3.1264 (.03)</td>
</tr>
<tr>
<td>Within</td>
<td>241</td>
<td>47.0228</td>
<td>.0174</td>
<td></td>
</tr>
</tbody>
</table>

High and Low Single Influencers – Ranks based on Member Perceptions on Questionnaire.

Categories 5 and 7 omitted.

(Two-way Analysis of Variance for Disproportionate Cells, Glass and Stanley (7), page 439).
This effect is interesting, since the differences in influence ratings are not consistently in one direction. In some instances, the ratings for the low influence people using a certain category are higher than when a high influence person used that same category.

The analysis of variance conducted with data from high and low double (top and bottom two from each group) concurs with the results found above in only one area. The data summary for this analysis is displayed in Table 3, page 49, while the results of the analysis are found in Table 4, page 50. Again, there are no significant differences between high and low influencers as determined by the questionnaire. The ARI scores are even more similar when members with less distinct differences are included, when only middle members are omitted. Also, when this test was run, it was found that there no longer appear to be differences in category use as an influence. And, there is not any significant interaction between category use and person. When basing this on rankings obtained from Member Perceptions from the questionnaire and omitting only the middle person from each group, it minimizes any distinctions between high and low influencers.

As can be seen in Table 5, page 51, the first Chi Square conducted resulted in highly significant findings. This test used all subjects, ranked according to Member.
### TABLE 3

| Category | N  | ΣX | ΣX² | X̄  | SD | ΣX | ΣX² | X̄  | SD | ΣX | ΣX² | X̄  | SD |
|----------|----|----|-----|-----|----|----|-----|-----|----|----|-----|-----|----|----|
| High Double Influencers | 53 | 181.7 | 623.7 | 3.43 | .46 | 82 | 1071.93 | 3.58 | .48 | 69 | 749.18 | 3.25 | .53 |
| Low Double Influencers | 10 | 33.38 | 112.88 | 3.34 | .40 | 30 | 101 | 3.0 | .56 | 32 | 349.06 | 3.37 | .43 |

### DATA SUMMARY FOR TABLE 4

High and Low Double Influencers - Ranks based on Member Perceptions on Questionnaire.

Categories 5 and 7 omitted.
<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
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<th>S.S.</th>
<th>M.S.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Low People (A)</td>
<td>1</td>
<td>.00001</td>
<td>.00001</td>
<td>.00001</td>
</tr>
<tr>
<td>Category (B)</td>
<td>4</td>
<td>.1408</td>
<td>.0352</td>
<td>.3797</td>
</tr>
<tr>
<td>A x B</td>
<td>4</td>
<td>.0274</td>
<td>.0069</td>
<td>.0744</td>
</tr>
<tr>
<td>Within</td>
<td>454</td>
<td>96.9646</td>
<td></td>
<td>.0927</td>
</tr>
</tbody>
</table>

High and Low Double Influencers - Ranks based on Member Perceptions on Questionnaire.

Categories 5 and 7 omitted.
(Two-way Analysis of Variance for Disproportionate Cells, Glass and Stanley (7), Page 439).
TABLE 5

<table>
<thead>
<tr>
<th></th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
<th>Cat. 6</th>
<th>Cat. 7</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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<tr>
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<tr>
<td>Second High</td>
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</tr>
<tr>
<td>E=20.5</td>
<td>55.73</td>
<td>36.84</td>
<td>31.17</td>
<td>19.13</td>
<td>10.86</td>
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<tr>
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<td>44</td>
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<tr>
<td>Third High</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>E=26.9</td>
<td>73.08</td>
<td>48.31</td>
<td>40.38</td>
<td>25.08</td>
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<td>11</td>
<td>19</td>
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<tr>
<td>Fourth High</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>E=7.41</td>
<td>20.1</td>
<td>13.29</td>
<td>11.24</td>
<td>6.9</td>
<td>3.92</td>
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<td>0=4</td>
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<td>4</td>
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<td>2</td>
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</tr>
<tr>
<td>Fifth High</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>E=4.83</td>
<td>13.09</td>
<td>8.66</td>
<td>7.32</td>
<td>4.49</td>
<td>2.55</td>
<td>2.05</td>
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<tr>
<td>0=6</td>
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<td>15</td>
<td>9</td>
<td>1</td>
<td>4</td>
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</tr>
</tbody>
</table>

Chi Square = 79.2176
df = 24
Need $\chi^2 (0.05) > 36.42$

Chi Square Data with Expected (E) calculated as a Binomial Distribution, using all subjects and all categories. Subject ranks determined by Member Perceptions on Questionnaire.
Perceptions from the questionnaires with a binomial distribution used for expected frequencies. This distribution was used to determine whether categories were used based on chance distributions. All seven categories were used in this test. This indicates that category use is not evenly distributed among the categories, that some categories are used far more frequently than others. Since subjects were ranked according to their level of influence, it also indicates that there are differences in category use by high influence people and by low influence people.

Two Chi Square tests were then conducted, the first using only the single most and single least influential subjects, and the second using high and low double influencers. These tests used a theoretical expected frequency, calculated by using the percentage of use each category had across all subjects. Once again, the inclusion of the second highest and second lowest subjects washed out the significant results found using only the highest and lowest singles. These results can be found in Tables 6 and 7, pages 53 and 54. Z-score analyses (also found in Tables 6 and 7) were conducted with this data. Using the extremes, Categories 2 (Idea Generation) and 3 (General Agreement) revealed significant Z-score results. Using high and low influence doubles, only Category 3 remained significant. In both cases, the proportion of
<table>
<thead>
<tr>
<th></th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Influence Singles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>33</td>
<td>40.67</td>
<td>18.18</td>
<td>19.14</td>
<td>6.22</td>
</tr>
<tr>
<td>%</td>
<td>15.79</td>
<td>38</td>
<td>40</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td><strong>Low Influence Singles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>6</td>
<td>15</td>
<td>9</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>14.29</td>
<td>25.71</td>
<td>21.43</td>
<td>9.52</td>
<td></td>
</tr>
<tr>
<td><strong>Z-score</strong></td>
<td>.2449</td>
<td>2.6474</td>
<td>2.54</td>
<td>.3417</td>
<td>.7766</td>
</tr>
</tbody>
</table>

Chi Square = 12.4968

$\chi^2 (4) > 9.49$

Z-score

Need $Z (.05) > 1.96$

Chi Square and Z-score data with Expected calculated from theoretical percentages using High and Low Single Influencers with Categories 5 and 7 omitted. Subject ranks determined by NumberRepetitions on Questionnaire.
<table>
<thead>
<tr>
<th></th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
<th>Cat. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Influence Doubles</td>
<td>E=48.34</td>
<td>131.12</td>
<td>86.57</td>
<td>73.35</td>
<td>45.02</td>
<td>25.54</td>
</tr>
<tr>
<td></td>
<td>O=53</td>
<td>141</td>
<td>82</td>
<td>69</td>
<td>48</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>%12.93</td>
<td>34.39</td>
<td>20.</td>
<td>16.83</td>
<td>9.76</td>
<td>6.10</td>
</tr>
<tr>
<td>Low Influence Doubles</td>
<td>E=12.62</td>
<td>34.22</td>
<td>22.62</td>
<td>19.14</td>
<td>11.75</td>
<td>6.67</td>
</tr>
<tr>
<td></td>
<td>O=10</td>
<td>30</td>
<td>32</td>
<td>13</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>%9.35</td>
<td>28.04</td>
<td>29.91</td>
<td>12.15</td>
<td>11.21</td>
<td>9.35</td>
</tr>
<tr>
<td>Z-score</td>
<td>1.0081</td>
<td>1.2433</td>
<td>2.2019</td>
<td>1.1801</td>
<td>4.4441</td>
<td>1.1917</td>
</tr>
</tbody>
</table>

Chi Square = 10.8660
\[ \text{df} = 5 \]
Need \[ \chi^2 (.05) \] > 11.07

Z-score
Need \[ Z (.05) \] > 1.96

Chi Square and Z-score data with Expected calculated from theoretical percentages, using High and Low Double Influencers with Category 7 omitted. Subject ranks determined by Member Perceptions on Questionnaire.
utterances in Category 3 was far greater for low influence members than for high influencers. In the data with only the top and bottom influencers, the high influencers used a far greater proportion of Category 2 than did low influencers. Those high in influence contributed more ideas than did low influence members. At this point, two additional z-score tests were run, collapsing across categories to better look at person, based on frequency alone. The first looked at the most and least influential singles in each group, the second at most and least influential doubles in each group. Both yielded highly significant differences. These findings indicate that one criteria group members used in determining most and least influential group members was amount of participation.

The next analyses of variance were conducted using the rankings of subjects based on the ARM rating scores. Again, the first of the series used only the single high and single low influencers, while the second used the double high and double low influencers. Category 7 (Irrelevant and Fragmentary) was omitted from this analysis due to insufficient use. Summary data for this test are displayed in Table 8, page 56, while the results of this test are displayed in Table 9, page 57. In this test, using only single highs and single lows, there were significant differences between high and low influencers.
### TABLE 8

<table>
<thead>
<tr>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
<th>Cat. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Single Influencers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 15</td>
<td>22</td>
<td>22</td>
<td>16</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>$\mu = 56.4$</td>
<td>79.4</td>
<td>82.8</td>
<td>58.5</td>
<td>20.4</td>
<td>20.2</td>
</tr>
<tr>
<td>$\mu^2 = 204.7$</td>
<td>291.36</td>
<td>315.24</td>
<td>216.75</td>
<td>83.52</td>
<td>68.66</td>
</tr>
<tr>
<td>$\bar{X} = 3.773$</td>
<td>3.6091</td>
<td>3.7636</td>
<td>3.6563</td>
<td>4.08</td>
<td>3.667</td>
</tr>
<tr>
<td>$SD = 2890$</td>
<td>.4780</td>
<td>.4147</td>
<td>.4366</td>
<td>.2643</td>
<td>.3615</td>
</tr>
<tr>
<td>Low Single Influencers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 22</td>
<td>77</td>
<td>40</td>
<td>46</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>$\mu = 69.5$</td>
<td>239.7</td>
<td>141.9</td>
<td>144.7</td>
<td>84.7</td>
<td>47.5</td>
</tr>
<tr>
<td>$\mu^2 = 222.8$</td>
<td>771.33</td>
<td>512.03</td>
<td>461.89</td>
<td>271.95</td>
<td>165.39</td>
</tr>
<tr>
<td>$\bar{X} = 359.5$</td>
<td>3.1130</td>
<td>3.5475</td>
<td>3.1457</td>
<td>3.1370</td>
<td>3.3929</td>
</tr>
<tr>
<td>$SD = 3924$</td>
<td>.5752</td>
<td>.4707</td>
<td>.3857</td>
<td>.490</td>
<td>.5704</td>
</tr>
</tbody>
</table>

### DATA SUMMARY FOR TABLE 9

High and Low Single Influencers - Ranks based on Audience Response Machine Ratings.

Category 7 omitted.
High and Low Single Influencers - Ranks based on Audience Response Machine Ratings.

Category 7 omitted.
(Two-way Analysis of Variance for Disproportionate Cells, Glass and Stanley (?), page 439).
When judged by ARM ratings, there are differences between the ratings received by the highest members and those received by the lowest members. Category differences, however, were insignificant, while the interaction effect was significant. Table 10, page 59 summarizes the data for the analysis of variance using high and low doubles, and Table 11, page 60 summarizes the results of this test, based on ARM ratings. Again, there were significant differences between high and low influencers. In this case, category differences were significant, while interaction effects were not significant. It appears that when considering subjects' influence as based on the ARM ratings, who is talking is more important than what type of utterance is being used.

The Chi Square tests based on rankings by ARM ratings were calculated using the theoretical expected frequencies as calculated above. Category 7 (Irrelevant and Fragmentary) was again omitted due to lack of use. Once again, both single highs and lows, and double highs and lows were used in separate tests. In both cases, the Chi Square was not significant. Again, Z-scores were computed with each set of data. In neither instance were there significant Z-score results. Both the Chi Square and Z-score test results are displayed in Tables 12 and 13, pages 61 and 62. These results indicate that quite possibly, when using the
### TABLE 10

<table>
<thead>
<tr>
<th></th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
<th>Cat. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 32</td>
<td>63</td>
<td>55</td>
<td>45</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>X = .1441</td>
<td>220.9</td>
<td>198.3</td>
<td>154.4</td>
<td>66.6</td>
<td>44</td>
</tr>
<tr>
<td>X^2 = .4132</td>
<td>787.75</td>
<td>726.01</td>
<td>542.46</td>
<td>237.74</td>
<td>150.48</td>
</tr>
<tr>
<td>X = 3.5656</td>
<td>3.5063</td>
<td>3.6105</td>
<td>3.4311</td>
<td>3.5053</td>
<td>3.3845</td>
</tr>
<tr>
<td>SD = .4512</td>
<td>.4614</td>
<td>.4523</td>
<td>.5372</td>
<td>.4882</td>
<td>.3602</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>99</td>
<td>57</td>
<td>50</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>X = .814</td>
<td>313.1</td>
<td>205.6</td>
<td>157.3</td>
<td>123</td>
<td>67.3</td>
</tr>
<tr>
<td>X^2 = .6258</td>
<td>1024.23</td>
<td>753.42</td>
<td>502.23</td>
<td>407.34</td>
<td>231.33</td>
</tr>
<tr>
<td>X = 3.121</td>
<td>3.1626</td>
<td>3.6070</td>
<td>3.1460</td>
<td>3.2368</td>
<td>3.3650</td>
</tr>
<tr>
<td>SD = .3707</td>
<td>.5891</td>
<td>.4594</td>
<td>.3877</td>
<td>.4989</td>
<td>.5060</td>
</tr>
</tbody>
</table>

**DATA SUMMARY FOR TABLE 11**

High and Low Double Influencers - Ranks based on Audience Response Machine Ratings.

Category 7 omitted.
<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>df</th>
<th>S.S.</th>
<th>M.S.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Low People (A)</td>
<td>1</td>
<td>.1519</td>
<td>.1519</td>
<td>20.1421 (.05)</td>
</tr>
<tr>
<td>Category (B)</td>
<td>5</td>
<td>.1249</td>
<td>.0250</td>
<td>3.3150 (.05)</td>
</tr>
<tr>
<td>A x B</td>
<td>5</td>
<td>.0785</td>
<td>.0157</td>
<td>2.0818</td>
</tr>
<tr>
<td>Within</td>
<td>502</td>
<td>119.8033</td>
<td>.0075</td>
<td></td>
</tr>
</tbody>
</table>

High and Low Double Influencers - Ranks based on Audience Response Machine Ratings.

Category 7 omitted.

(Two-way Analysis of Variance for Disproportionate Cells, Glass and Stanley (?), page 439.)
<table>
<thead>
<tr>
<th>Cat.</th>
<th>Cat.</th>
<th>Cat.</th>
<th>Cat.</th>
<th>Cat.</th>
<th>Cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>High Influence Singles</td>
<td>E=10.14</td>
<td>27.5</td>
<td>18.44</td>
<td>15.39</td>
<td>9.44</td>
</tr>
<tr>
<td></td>
<td>O=15</td>
<td>22</td>
<td>22</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>% = 77.44</td>
<td>26.8</td>
<td>26.8</td>
<td>19.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Low Influence Singles</td>
<td>E=26.65</td>
<td>72.27</td>
<td>48.43</td>
<td>40.43</td>
<td>34.81</td>
</tr>
<tr>
<td></td>
<td>O=22</td>
<td>77</td>
<td>40</td>
<td>46</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>% = 9.73</td>
<td>34.2</td>
<td>18.8</td>
<td>20.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Z-score</td>
<td>1.88</td>
<td>-1.36</td>
<td>1.58</td>
<td>-0.2</td>
<td>-1.56</td>
</tr>
</tbody>
</table>

Chi Square = 9.85  
\[ df = 5 \]  
Need \[ \chi^2 (.05) > 11.07 \]

Z-score  
Need \[ Z (.05) > 1.96 \]

Chi Square and Z-score data with Expected calculated from theoretical percentages, using High and Low Single Influencers with Category 7 omitted. Subject ranks based on Audience Response Machine ratings.
<table>
<thead>
<tr>
<th>High Influence Doubles</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>E=26.76</td>
<td>72.59</td>
<td>48.67</td>
<td>140.61</td>
<td>24.02</td>
<td>14.14</td>
<td></td>
</tr>
<tr>
<td>0=32</td>
<td>63</td>
<td>55</td>
<td>45</td>
<td>19</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>%14.</td>
<td>28</td>
<td>24</td>
<td>20</td>
<td>8</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Low Influence Doubles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>E=34.19</td>
<td>92.74</td>
<td>52.18</td>
<td>51.88</td>
<td>31.84</td>
<td>16.07</td>
<td></td>
</tr>
<tr>
<td>0=26</td>
<td>99</td>
<td>57</td>
<td>50</td>
<td>30</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>%9.</td>
<td>34</td>
<td>20</td>
<td>17</td>
<td>13</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Z-score</td>
<td>1.01</td>
<td>-.95</td>
<td>.66</td>
<td>.51</td>
<td>-1.02</td>
<td>-.20</td>
</tr>
</tbody>
</table>

Chi Square = 9.37  
df = 5  
Need \( \chi^2 (.05) > 11.07 \)

Z-score  
Need \( Z (.05) > 1.96 \)

Chi Square and Z-score data with Expected calculated from theoretical percentages, using High and Low Double Influencers with Category 7 omitted. Subject ranks determined by Audience Response Machine ratings.
ARM ratings, category use is not as important as speaker. Since highs and lows did not differ from the expected frequencies, and there were insignificant differences in category use, person seems here to be more important in the evaluation of influence.

Thus, the information yielded by rating subjects according to Member Perceptions on the questionnaire and according to ARM is largely different. The former indicates that category use is more important than speaker, while the latter sees influence as based largely on speaker. Member perception ratings from the questionnaire indicate that there are definite differences in category usage by high and low influencers, while ARM data does not support this. Based on member perception data, low influence members agree far more, and participate far less than high influence members. Neither of these findings are congruent with ARM-based data.

Inconsistent as they may seem, these findings can begin to answer the question "Is perceived leadership significantly associated with person, with message content, or with amount of participation?"
CHAPTER FIVE

DISCUSSION

Among the most interesting aspects of the results of this study are the similarities and contradictions in rankings based on Member Perceptions as found on the questionnaire and those based on ARM scores (see Figure 6, page 44). The differences in ranking are frequent enough to indicate that subjects used different criteria for evaluation in each situation. The questionnaire rankings are based on an overall, more global type of consideration, while the ARM rankings are based on continuously-mades evaluations of far smaller segments of the interactions. These differences will be discussed more thoroughly below. The occurrence of some similar and identical ratings from the two types of evaluation do suggest that some members were able to fulfill the criteria for both forms of evaluation. Each aspect of the research question, person, content, and amount of participation, as well as some methodological aspects of the study, will be discussed below, beginning with person.

PERSON

Based on the analyses of variance conducted using Member Perception rankings from the questionnaires (Table 2, page 47 and Table 4, page 50), there are no statistically significant differences among people, using the ARM scores
as the dependent variable. This indicates that in the global impression type of rating, content is at least as important as who is talking, that person alone is not a reliable indicator or cause of high influence. The group members apparently cannot make just any type of statement, or become leaders or influencers just on the basis of who they are. There are several possible explanations for this finding. As will be discussed further, the low influence people, as perceived by group members in their responses to the questionnaire, used proportionately far more agreement statements than did the high influence members. Because of this large amount of agreement, the low influence members' ARM means could have been much higher because of the high ratings on their agreement statements. When a group member is agreeing, there is a tendency toward favorable responses, reflected in higher ARM scores. This could very easily have washed out any other differences between high and low influence members.

Another possible explanation for this lack of significant differences among people in the overall ratings lies in the length of the discussions. The longest of the four groups used for this study had about thirty minutes of discussion. The other three groups each had discussions lasting less than one-third that time. In such short discussions, it is conceivable that distinctions among
group members had no chance to emerge clearly. Although subjects had been in a class together for seven weeks, this discussion was effectively their first meeting as a group. Roles and opinions were still in the formulation stage, and six to thirty minutes of discussion is apparently an insufficient time to develop a pattern of group interaction consistent enough to be reflected in the ARM ratings. It is interesting to note that although distinctions among high and low influencers were not apparent through the ARM responses, the subjects were able to make such distinctions and ratings of group members on the questionnaire. There seemed to be little difficulty in making these evaluations, and responses within a group were fairly consistent.

The interaction effect found in the analysis of variance using only single highs and single lows, according to questionnaire responses (Table 2, page 47) also provides insight into the lack of distinction among high and low influencers. Interestingly, the means for low influence members using some categories was higher than the means for high influence members using those categories. There were three categories with these results. These categories were "Solution Proposals," "General Agreement," and "General Disagreement." The latter two of these might be considered to be rather further away from the realm of the
actual problem solving, and so might indicate that while the ARM scores were higher here, in terms of overall completion of the task and general influence concerning the task, the low influencers might still be low. These two categories do not reflect directly upon the task, so the members did not see these as high in influence when they made their overall ratings on the questionnaire. It is possible that "Solution Proposals" made by the low influence members were more of a group summary made by that person, rather than a daring new proposal as might be made by the higher influence members. Thus, when low influence people proposed solutions, they could well have been summarizing rather than actually proposing new ideas, which would be reflected in the higher ARM ratings. This is supported by the frequency of use of the "Idea Generation" category. High influencers used a significantly greater proportion of statements in this category than did low influencers. This suggests that more of the actual new ideas and solution (highs also used more of these than did lows) came from highs than from lows.

The analyses of variance based on ARM ratings (Table 9, page 57 and Table 11, page 60) do reveal highly significant differences between high and low influence members. In this type of rating, subjects are doing a moment-by-moment evaluation, in which they apparently do not judge
by the actual statements themselves, but rather the persuasiveness and delivery of the statement. They are here most concerned with who is talking than with actual content. Once explanation for this is that in doing this type of continuous evaluation, there is little time to consider the actual statement. One cannot make a thorough evaluation of the statement in the short time available. It is apparently easier to make judgments based on who is talking than on what is actually being said in a quick rating of a statement.

The significant differences between ARM highs and lows found in this analysis could plausibly be explained by realizing that members were in this case making their ratings based on a video-tape of their discussion. The concentration on task accomplishment is lessened since they have just finished the task and are simply viewing the process of reaching their decision. Although subjects were asked to respond as they felt during the discussion, this is difficult to do. It is quite possible that these ratings were made based on who did better on camera, who looked more comfortable, sounded better on tape, and so on. In this way, ratings would almost certainly reveal distinct differences among people, and be different from an overall impression ranking moments after task completion.
Contradictions in rankings based on questionnaire and ARM ratings resulted not only from differences in people, but from differences in category use. The analysis of variance based upon single most and single least influential subjects as determined by Member Perceptions on the questionnaire (Table 2, page 47) revealed significant differences in category use. Not surprisingly, the "General Agreement" category had the highest ARM ratings for both high and low influencers (see X, Table 1, page 46). When people agree, they are generally feeling good about the group discussion and so feel more positively influenced at that point. The lowest rating was received by the "Procedural category. This makes intuitive sense, because while the rating for this is the lowest, it is still neutral rather than negative, and procedural matters do not generally increase or decrease influence in a task. Procedural comments are often neutral comments that do not directly bear on influencing the results of the discussion. The category of "Solution Proposals" over all members is slightly higher (3.5) than the "Idea Generation" category (3.4), indicating that solutions might be suggested only when there seems to be a general feeling of approval toward an idea. Ideas may or may not be accepted when they are first proposed, but
by the time they become actual solution proposals, there are indications of approval.

The high influence members according to the questionnaires generate more ideas than do low influence members (Table 1, page 46 and Table 3, Page 49). Again, ideas may be rated more negatively since they have not yet received general group approval. This, coupled with the proportionately greater use of "General Agreement" by low influencers might have washed out differences between high and low influencers. Since the ratings for agreement statements were higher than for idea generation, the differences in ARM ratings between high and low might easily have been dampened. It is interesting to note, however, that in global evaluation of the group members, those who used agreement statements in greater proportion received lower ratings. This could be interpreted as meaning that "yes-men" are not leaders, but do reflect the mood of the group by making agreement statements and solution proposals when other members are ready to hear them. Those who agree more appear to not be leaders in task situations.

When ranking by the ARM responses (Table 9, page 57 and Table 11, page 60), there were no significant differences in category use. This could plausibly be the result of looking at only small segments of the interaction, and
judging either by impressions of person or by single utterances, rather than by type of utterance. One idea might have been less well presented and more reasonable than another, thus eradicating differences between categories. Based on the highly significant differences in ARM scores for high and low influencers, it is quite likely that, as discussed above, subjects were reacting in an immediate sense to the person speaking. Also, at this point, they were somewhat removed from the task orientation that prevailed in completing the questionnaire.

AMOUNT OF PARTICIPATION

The third part of the research question deals with the amount of participation as a possible distinguishing characteristic of leaders and nonleaders. This aspect of the study as found in the Chi Square tests, with subjects ranked according to Member Perceptions on the questionnaire (Tables 6 and 7, pages 53 and 54), yielded interesting results. As could be expected, categories were not all used with consistent frequency. "Idea Generation" was the most frequently used category, while "Procedural" comments were used the least (except for the omitted category of "Irrelevant and Fragmentary"). Since this is a task-oriented discussion, and certain communicative behaviors are necessary to complete a discussion task, not all types of communicative behaviors were used equally.
In addition to this unequal usage of categories, however, there is also a striking difference in frequency of total participation by high and low influence people, as ranked by the questionnaire. This difference revealed that the most striking difference in frequency of category use between high and low influence subjects was found in the "General Agreement" category. Low influence members used this category in far greater proportion to their total utterances than did high influencers, as is discussed above. The difference in amount of participation could easily be the deciding factor in enabling subjects to rank group members on the questionnaire. In all cases, the high influence members participated far more than did low influence members. In completing the global evaluation of group members, they are easily able to consider who participated the most and contributed the most ideas. In only one instance did the most frequent participant not receive the highest rating; she was ranked in the middle on the questionnaire and lowest in ARM ranking. This supports Stang's contention that amount of participation and liking are curvilinearly related. However, up to a certain point, those with greatest participation are seen in overall evaluation as the most influential.

It is this difference in participation that could
account for some variations when the ARM-ranked data was used. A group member with only one or two comments could very easily hit the group mood on the nose and thus receive a higher ARM score and ranking than another member who actually exerted more influence throughout the interaction. When using the ARM score rankings there were no significant differences in amount of participation between high and low influencers. Again, this could be a result of evaluating the interaction and group members in a segmented manner rather than proceeding from overall, total interaction evaluations.

It appears then, that the type of evaluation people are doing determines what criteria they use to evaluate leadership and extent of influence. It is the opinion of this author that the more useful and practical applications of this study result from conclusions based on the Member Perceptions as found on the key questions of the questionnaire (Figure 1, Page 31). This overall type of evaluation is more similar to the ways people would be viewing and evaluating leadership in daily situations. For this reason, conclusions made will be based largely on data obtained from questionnaire rankings of influence.

METHODOLOGY

There are several methodological aspects of this study that warrant discussion. The largest single segment of
this study was the transcribing and coding of utterances. This author feels this portion of the study is among its most solidly based aspects. It is this coding that enables discussion of the types of communicative behaviors used in discussion groups. The statement-by-statement analysis allows a thorough look at what types of statements people use in discussion groups, followed in this study by a look at which of these behaviors are most influential. Without the content analysis, only vague impressions of what occurred in the groups would be available. It is for this reason that this author advocates the use of category systems and content analysis for fruitful study of small group communication behaviors in general and leadership behaviors in particular.

In addition to the practical advantage of category systems and content analysis discussed above, the theoretical base of category systems is appropriate for the study of communication. Category systems and analyses based on them make several assumptions about communicative behavior, which also underlie this study. Communication is seen as a critical component of small groups, and a way to understand what occurs in them. Such category systems also have the basic assumption that communication forms patterns and proceeds according to generally understood rules. However, these rules are not inflexible, and category systems
allow a certain flexibility in use, such as the combining and collapsing of categories that was done in this study. So, in addition to the practical advantages of content analysis through category systems, there are theoretical needs also met by this method.

An innovation in the study of leadership has been made in this study also. The use of the Audience Response Machine to continuously record subject responses during stimulated recall, while still having some problems, can contribute much to leadership research. The advantages of this method lie in the continual responses allowed and the availability of these over the life of the discussion. This data, which has not before been easily available, can tell us much about the ways people evaluate group members, how these feelings change at different points in the interaction, and to some extent, the variability of these evaluations and feelings. While some problems might occur in the transfer of feelings to the response buttons, much is to be gained by being able to have more than general observer impressions, and it is likely that responses in this way are more realistic than paper and pencil responses.
LIMITATIONS

While the results of this study have strong indications for the consideration of leadership, there are some inherent limitations in the generalizability of the results. Four groups of college students were used, and three of these four interactions were only six to eight minutes long. This time could easily have been too short for any distinction among people to show clearly. The task itself, although a relatively common type of exercise for college students, is not necessarily typical of the general population.

A possible methodological complication arises from the fact that coding was completed over a six month period. This could quite possibly lessen the reliability of the coding, lessen the consistency of interpretations of categories. Two coders completed the coding in a two-month period, but the final coder was not completed until several months later, after a time away from the project. In addition, the fact that two coders met weekly, with one week absences in between meetings, could have served to lessen the reliability of determining what constituted an utterance. In this way, the first tape coded could have either longer or shorter utterances than the last tape coded. This coding schedule necessitated renegotiating the categories and refreshing our memories at each
meeting, and while efforts were made to keep these consistent, through note-keeping and memory joggers, there is a strong possibility of inconsistency.

The use of the Audience Response Machine is not infallible, nor completely ironed out. There is a strong possibility of the ARM responses lagging behind what the subjects were intending to respond to - and this lag could possibly have been a steady several second lag or inconsistent in length. It is difficult to determine precisely what the subjects were responding to and how quickly their influencability changed. The machine itself also is not entirely consistent. Its printout rate varied from 0.8 second to 1.2 seconds, making it difficult to determine exact lengths of utterances.

Difficulties occurred to some extent in reconciling the partial transcript to the ARM printout, because of the inconsistent printing time discussed above, as well as some disagreements between printout and transcript concerning speaker and length of utterances. These difficulties were reconciled by letting the transcript take precedence over the printout for speaker determination and piecing together the printout with the transcript for utterance length, in such a way that both experimenters felt comfortable with the accuracy obtained in this area.
CONCLUSIONS

In terms of overall, after-the-fact evaluations of leadership, it appears that the two significant factors for distinguishing leaders from nonleaders are content (category use) and amount of participation. In terms of minute-by-minute evaluations of leadership and influence, person (speaker) seems to be more important than either of the other two components considered here, content and amount of participation.

Concentrating on the overall evaluations obtained from Member Perceptions from the questionnaire, members were able to rank people as to leadership and influence, but do this largely on the basis of content and amount of participation rather than on person. Those with the least influence agree far more often than others. Steady or frequent agreement does not appear to be a useful way of attaining influence or leadership. Those who contribute many ideas do wield more influence than others, indicating that a strong base for influence is the generation of ideas. This also suggests that people who become leaders in task-oriented groups do so less because of who they are than because of what they say and how much they participate. These imply that leadership is more content-centered than person centered.

This has implications for future leadership study as
well as for daily encounters with leaders and nonleaders. This suggests that further study in this area should concentrate more on communicative behaviors than upon person, or ethos. It also implies that leadership evaluations vary with the situation and type of evaluation techniques.

Again, I base my final conclusion on the overall rankings and evaluations of leadership. The research question can then be answered:

Leadership appears to be more significantly associated with content and amount of participation than with person.
DIRECTIONS: Read the following story carefully, then follow the directions at the end of the story.

Once upon a time, there was a woman named Abigail who was very much in love with a man named Gregory. Gregory lived on the west shore of a river and Abigail lived on the East shore. The river which separated the two lovers was teeming with man-eating alligators. Recent spring rains had caused the river to fill and wash out all the bridges. This created a problem for Abigail who wanted very much to cross the river and be with Gregory. She decided she would go see Sinbad, the only riverboat captain in the area, and see if he would take her across the river to Gregory. Sinbad said that he would be glad to take her across. However, he would take her across only if she consented to first go to bed with him preceding the voyage. Abigail promptly refused and ran to tell her friend Ivan of her terrible plight. Ivan told her not to come running to him every time she had a little problem and that he didn't want to get involved in it in any way. Abigail left Ivan and in despair went to Sinbad and accepted his terms. Sinbad fulfilled his promise to Abigail and delivered her into the arms of Gregory.

Heartbroken, Abigail told Gregory about her amorous escapade with Sinbad so that she could cross the river. Gregory, proclaiming her a tramp, cast her aside with disdain. Defeated and dejected, Abigail then turned to Andrew with her tale of woe. Andrew, feeling compassion for Abigail, sought out Gregory and beat him brutally in the presence of Abigail. Abigail was overjoyed at the sight of Gregory getting his just reward for rejecting her. As the sun sets, Andrew is standing over a limp and bloody Gregory, and Abigail is laughing at Gregory.

DIRECTIONS: First, you are to individually rank each individual in the story above according to "how nice a person they are." After you have done that, your group must decide on a group rank which meets with each member's
satisfaction. If there are any questions, please don’t hesitate to ask. Use a 1 to indicate the “nicest” person, and 2 for the next nicest and so on in the blanks below.

<table>
<thead>
<tr>
<th>INDIVIDUAL RANKING</th>
<th>GROUP RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abigail</td>
<td>Abigail</td>
</tr>
<tr>
<td>Gregory</td>
<td>Gregory</td>
</tr>
<tr>
<td>Sinbad</td>
<td>Sinbad</td>
</tr>
<tr>
<td>Ivan</td>
<td>Ivan</td>
</tr>
<tr>
<td>Andrew</td>
<td>Andrew</td>
</tr>
</tbody>
</table>
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STORY AND TASK GIVEN TO SINGLE GROUP

DIRECTIONS: Below you will find a list of people surviving a terrible accident at sea. 25 individuals from the ship managed to climb into a lifeboat. Most of the survivors are women and children. The lifeboat is 1,500 miles from the nearest land. It has food and water enough to last 3 weeks and it is supplied with oars, a sail and a compass. The storm which brought about the accident has driven them far off the normal shipping lanes.

Mr. Makay: 39 years old, a wealthy, self-made man. He owns and directs a large construction company that he has personally put together in the last 17 years.

Mrs. Makay: 43 years old, holds a Ph.D. in political science and is president of NOW.

Reverend Brown: 55 years old, a deeply religious man who has risen to national prominence because of his leadership within the church.

A German Sea Captain, Herr Wahl: Cannot speak English. He cannot understand the others nor can they understand him. He is 35 years old.

Mr. Neffengerin: 35 years old, a boatswain for the past 15 years, 13 of which were spent at sea.

Mr. Howes: An official of a large labor union who has fought his way up through the ranks as an organizer.

Mr. McCain: Well known radio and T.V. personality. He is equally well known as a yachtsman and a playboy. He is 35 years old.

The seas are now still and the dangers have passed. The problem facing the group is survival. Which of the seven persons will rise to a position of leadership and why. Which of the seven persons will rise to the second most influential position and why. If time permits, who will rise to the third most influential position and why.
QUESTIONNAIRE

Group Number
Member Number

Each member in your group has been given a number according to their seating arrangement. Use this number to rank-order each member according to the extent to which you believe they exhibit the characteristics listed below.

For example, the first characteristic is "Physically Attractive." Place the number of the member you believe to be the "most physically attractive" in the blank immediately to the right. Place the number of the member you believe to be the next most "attractive" in second blank to the right and so forth until you have placed the number of the member you consider "least attractive" in the blank immediately to the left of the phrase "Least Physically Attractive."

MOST PHYSICALLY
ATTRACTIVE

!_____!_____!_____!_____!_____!

LEAST PHYSICALLY
ATTRACTIVE

MOST FRIENDLY

!_____!_____!_____!_____!_____!

LEAST FRIENDLY

MOST OUTGOING

!_____!_____!_____!_____!_____!

LEAST OUTGOING

MOST POISED

!_____!_____!_____!_____!_____!

LEAST POISED

MOST TALKATIVE

!_____!_____!_____!_____!_____!

LEAST TALKATIVE

MOST BOLD

!_____!_____!_____!_____!_____!

LEAST BOLD

MOST PERSUASIVE

!_____!_____!_____!_____!_____!

LEAST PERSUASIVE

MOST

INTELLIGENT

!_____!_____!_____!_____!_____!

LEAST INTELLIGENT

MOST QUALIFIED

!_____!_____!_____!_____!_____!

LEAST QUALIFIED

MOST EXPERT

!_____!_____!_____!_____!_____!

LEAST EXPERT

MOST LOGICAL

!_____!_____!_____!_____!_____!

LEAST LOGICAL

MOST FAIR

!_____!_____!_____!_____!_____!

LEAST FAIR

MOST HONEST

!_____!_____!_____!_____!_____!

LEAST HONEST

MOST

TRUSTWORTHY

!_____!_____!_____!_____!_____!

LEAST TRUSTWORTHY

MOST GOOD

!_____!_____!_____!_____!_____!

LEAST GOOD
QUESTIONNAIRE, p. 2

Please fill in the blanks with the appropriate group member number.

1. Overall, I perceived the leader of our group to be member number ____.  

2. Overall, I perceived member number ____ to be the most influential to our task.

3. I believed member number ______ was the most persuasive in my decisions during our task.

4. ______ could be a friend of mine.

5. ______ was the least influential to our task.

6. ______ didn't like me.

7. ______ is similar to me.

8. ______ is unlike me.

9. ______ thought he/she was the leader of the group.
MORRIS AND HACKMAN CATEGORY SYSTEM

1. Structure Problem - Investigate task and members' opinions on task, define words, read or discuss problem statement; state time remaining.

2. Structure Answer - Delimit general characteristics of solution to problem; met mode, style, format, outline, nature of content of answer; propose generic solution.

3. Propose Solutions - Set forth, develop, or revise a specific solution.

4. Clarify - Simple explanation or clarification; assess progress toward solution.

5. Defend - Support, justify, defend, argue in favor of a statement, generally with attempt to convince others.

6. Repeat - Verbatim repetition (except of agreement or disagreement).

7. Agree - Agreement, positive evaluation

8. Disagree - Disagreement, negative evaluation, point up obstacles, call into question.

9. Seek Structuring - Ask for problem structuring (1) or solution structuring (2).

10. Seek Solution Proposals - Ask for specific solution (3).

11. Seek Clarify-Defend-Repeat - Ask for explanation (4), defense (5), or verbatim repetition (6).

12. Seek Evaluation - Ask for agreement (7) or disagreement (8).

13. Procedure - Structure, set forth, clarify, defend, repeat, agree or disagree with mechanical procedure.

14. Seek Procedure - Ask for procedural comment (13).

15. Irrelevant - Relevant neither to task nor to procedure.

16. Fragmentary - Comment so brief that classification in 1 - 15 is impossible.
MULTIPLE CODING REASSIGNMENTS

Became Cat. 3 - Proposed Solutions
3.5
3.7
3.4
3.12
9.3
4.3.7
8.3

Became Cat. 5 - Defend
4.5.7

Became Cat. 6 - Repeat
4.6

Became Cat. 8 - Disagree
12.8

Became Cat. 10 - Seek Solution Proposals
7.10
9.10
2.10.13

Became Cat. 11 - Seek Clarify-Defend-Repeat
8.11
8.11.5

Became Cat. 12 - Seek Evaluation
11.12
12.10

Became Cat. 13 - Procedure
3.13
4.13
8.13
7.13
5.13
11.13

Became Cat. 14 - Seek Procedure
12.13
14.11
10.14

Became Cat. 16 - Fragmentary
7.16

Became Cat. 5, 8 - Disagree and Defend
4.5.8
NEW CATEGORY SYSTEM

1. Solution Proposal
2. Idea Generation
3. General Agreement
4. General Disagreement
5. Seeking
6. Procedural
7. Irrelevant & Fragmentary
NOTES


