Leader sex and task orientation: an information processing perspective

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LEADER SEX AND TASK ORIENTATION:
AN INFORMATION PROCESSING PERSPECTIVE

BY

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During the last five years I have faced two life threatening illnesses. In both cases the support of my family has made a big difference in the rate and quality of my recovery from both of these ordeals. Without their understanding it would be questionable as to whether or not I would have been able to return and complete this degree. Therefore, I dedicate this work to my family: my father, Mr. Joseph Buhr; my stepmother, Mrs. Patricia Buhr; my sister, Martha Hahn; my brothers, Richard and James Buhr; my sisters-in-law, Kathy and Cheryl Buhr; my brother-in-law, Larry Hahn; my nieces, Lissa Buhr and Kathyrine Hahn; my nephews, Ben, Bill, James, and Thomas Buhr II, Joe Hahn; and the family's two golden retrievers, Chrissy Buhr and Hanna "Frank Tanana" Buhr. Thanks for being there when it mattered.

Love,

Thomas A. Buhr
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>iv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>BACKGROUND RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>Leader Consideration and Task Orientation</td>
<td>3</td>
</tr>
<tr>
<td>Leader Sex</td>
<td>8</td>
</tr>
<tr>
<td>Information Processing and Cognitive Responses</td>
<td>14</td>
</tr>
<tr>
<td>Problem</td>
<td>21</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>21</td>
</tr>
<tr>
<td>Operational Definitions</td>
<td>23</td>
</tr>
<tr>
<td>Identification of Variables</td>
<td>26</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>27</td>
</tr>
<tr>
<td>RESULTS</td>
<td>31</td>
</tr>
<tr>
<td>Manipulation Checks</td>
<td>31</td>
</tr>
<tr>
<td>Task Performance</td>
<td>33</td>
</tr>
<tr>
<td>Cognitive Tendencies Toward Certain Cluster Items</td>
<td>34</td>
</tr>
<tr>
<td>Affective Cognitive Tendencies Toward Cluster Items</td>
<td>49</td>
</tr>
<tr>
<td>Task (Central) and Social (Peripheral) Cognitive Patterns</td>
<td>68</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>80</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>102</td>
</tr>
<tr>
<td>A. Group Leaders Responsibilities</td>
<td>103</td>
</tr>
<tr>
<td>B. College Student's Survival Kit</td>
<td>106</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>114</td>
</tr>
</tbody>
</table>
LIST OF TABLES

1. Task Performance Among Treatment Groups p<.01 .............. 35

2. Individual Affective Neutral Tendencies Toward Overall Cluster Thoughts By Leader Sex And Orientation p<.01 .............. 39

3. Group Neutral Affective Overall Tendency Toward Cluster Items By Leader Sex and Orientation p<.01 Unless Otherwise Noted ........... 41

4. Individual Tendencies to Think About the Task P<.01 Unless Otherwise Noted .............. 41

5. Individual Tendencies to Think About the Group p<.01 .......... 43

6. Individual Tendencies to Think About Certain Cluster Items p<.01 Unless Otherwise Noted .................... 45

7. Overall Individual Tendencies to Think About Certain Cluster Items by Leader Orientation, Respondent Sex, and Type of Cluster Cognition ................ 46

8. Group Tendency to Think About Certain Cluster Items p<.01 ................... 48

9. Individual Favorable-Negative Affective Tendencies Toward the Leader by Leader Sex and Respondent Sex p<.01 ...................... 51

10. Individual Favorable-Negative Affective Tendencies Toward the Task by Leader Sex, Leader Orientation, and Respondent Sex p<.01 Unless Otherwise Noted ............... 53

11. Individual Affective Neutral Tendency Toward the Group by Leader Condition and Respondent Sex p<.01 Unless Otherwise Noted .................. 55

12. Individual Affective Neutral Tendency Toward the Task by Leader Sex and Orientation p<.01 Unless Otherwise Noted ...................... 57

13. Individual Overall Neutral Affective Thoughts by Leader Sex and Orientation p<.01 .................... 57

iv
14. Group Overall Neutral Affective Thoughts by Leader Sex and Orientation p<.01 Unless Otherwise Noted .... 59

15. Individual Overall Favorable-Negative Affective Tendencies Toward Certain Cluster Items by Leader Sex or Orientation p<.05 .......................... 61

16. Group Overall Favorable-Negative Affective Tendencies Toward Certain Cluster Items by Leader Sex or Orientation p<.05 .......................... 63

17. Individual Neutral Affective Tendencies Toward Overall Cluster Items by Leader Sex or Orientation p<.01 .... 65

18. Group's Overall Neutral Affective Tendencies Toward Certain Cluster Items by Leader Sex or Orientation p<.01 .............................. 67

19. Individuals Favorable-Negative Affective Social-Oriented (Peripheral) Tendencies by Leader Sex and Respondent Sex p<.01 .............................. 70

20. Individual Favorable-Negative Affective Social-Oriented (Peripheral) Tendencies by Leader Orientation and Respondent Sex p<.01 .............................. 72

21. Individual Neutral Affective Social-Oriented (Peripheral) Tendencies by Leader Orientation and Respondent Sex p<.01 .............................. 72

22. Individual Levels of Raw Social-Oriented (Peripheral) Thoughts by Leader Orientation and Respondent Sex p<.01 .............................................. 75

23. Task-Oriented (Central) Cognitions vs. Total Thought Index p<.01 .............................................. 77

24. Task-Oriented (Central) Cognitions vs. Total Thoughts Index for Females p<.01 .............................................. 77

25. Task-Oriented (Central) Cognitions vs. Total Thoughts Index for Males p<.01 .............................................. 78
INTRODUCTION

The role of leadership and its effect on small group function and efficiency has led to a wealth of research data. Of particular importance to the real world outside the laboratory and the classroom are the leadership variables of sex and task orientation. In the last two decades, women have assumed more leadership positions in the business and political world than at any other time in the past (White, De Sanctis & Crino, 1981). In addition, there has been a call to examine the many different ways a leader can approach the group to accomplish a task (Fiedler, 1978). Two basic approaches are those of task orientation, which involve the leader concentrating on completion of the task with little consideration of any other elements, and social orientation (also known as leader consideration) which concentrates on the social maintenance of those members in the group.

While a great deal of research has been done on these variables and their interaction with other variables, none of these studies has examined the dynamics of these variables from an information processing perspective. Is it possible that male and female leaders may stimulate different types of group member cognitions under task or social orientations? If indeed this is possible, could the type and direction of these cognitions affect the overall performance of the group?

The purpose of this study is to examine if the leader's sex and orientation preference affect the type and direction of group members'
cognitions, and further, if these member cognitions will have any relationship to the overall group performance.
BACKGROUND RESEARCH

Leader Consideration and Task Orientation

The most important major theory in consideration of this study is Fiedler's contingency model of leadership. Fiedler's major contribution is the understanding that it provides for the dynamic interaction of leader and organization (Fiedler, 1978). Furthermore, the contingency model enables the social scientist to interpret and predict changes in leader behavior and performance in terms of concomitant or incidental changes in the leader's situational control (Fiedler, 1978). The model shows that the performance of the relationship-oriented leader increases as situational control changes further from very low to moderate and decreases as it changes further from moderate to high. Additionally, the performance of the task motivated leader will first decrease as situational control changes from low to moderate and will then increase as it becomes high.

Griffin (1980) investigated the relationships among individual, task design, and leader behavior variables. Among the findings were a prediction that leader behavior influences the relationship between individual-task congruence, satisfaction, and productivity. Facets of satisfaction predicted to be related to leader behavior are satisfaction with the job, satisfaction with supervision, and overall satisfaction. The implication would be that the primary impact of appropriate behavior on the part of a leader may be on affective
variables rather than behavior variables. However, it was further reported that when individual task congruence is high, there was little the leader could or should do to enhance individual satisfaction. Additional results show that leader behavior may have a positive influence on employee satisfaction when the characteristics of the task and the needs of the individual are not properly matched. Through exhibiting certain forms of behavior, the leader may, at least partially, serve to neutralize individual task incongruence and, in turn, increase employee satisfaction.

Abdel-Halim (1981) scrutinized personality and task moderators of subordinate responses to perceived leader behavior. Significant interactions were obtained between leader consideration and role ambiguity, job complexity, and locus of control. Leader initiating structure has a significant interaction with locus of control. However, the direction was opposite than predicted. Leader consideration was associated with high intrinsic satisfaction, and job involvement for subordinates on comparatively simple, structured jobs and was not associated for those on relatively complex, unstructured jobs. Leader consideration can play a positive role for those on highly ambiguous jobs. It can serve as a "compensatory" reward that helps offset some of the negative aspects of job stress and it would seem to provide an organizational social avenue similar to peer group support. The locus of control hypothesis found that internal subordinates reported significantly higher job involvement under high rather than low leader initiating structure, while the external
subordinates results were exactly the opposite. It was also revealed that external subordinates report significantly lower intrinsic satisfaction than do internals under low leader consideration with the former's satisfaction cores greatly increased as leader consideration varies from low to high. These findings are opposite the locus of control hypothesis.

Ferris (1983) looked at the influence of leadership on perceptions of job autonomy. This study tested the hypothesis that structuring and considerate leader behaviors would focus the attention of subjects on job autonomy, and thus would influence their perceptions of it only and would not show effects on other job characteristics. However, it was not supported. Working under conditions of high consideration and low structure, subjects exhibited high autonomy perception, but not as high as those in the low consideration and high structure. The implications that could be drawn from this study are that high consideration could have been perceived as contributing to a greater sense of self worth and freedom, and thus to higher perceived autonomy. However, when leader consideration was low and little structure provided, the subjects might well have felt lost because of the pure absence of leadership, thus they could have experienced little freedom or autonomy. But, on the other hand, high structure may have served to compensate for low consideration since the leader's behavior was then task-oriented to the point and may have provided greater clarity to the ambiguous task and increased perceptions of autonomy.
Jurma (1979) explored the effects of leader structuring style and task-orientation characteristic of group members. The results represented little difference in the behavior of high task-oriented subjects, regardless of whether they interacted with structuring or nonstructuring leaders. However, subjects low in task-orientation were significantly more satisfied with their leader and their group's task performance, and were judged on discussion tapes as being in discussion groups of higher quality and they made more communication skills statements and fewer social-emotional contributions when they worked with structuring leaders than when they worked with nonstructuring leaders. The author states that this would imply that low task-oriented individuals seem to require the guidance provided by structuring leaders for effective group performance. Apparently, high task-orientation subjects are capable of following the direction provided by structuring leaders and providing the missing leadership functions when they work with nonstructuring leaders.

Weed, Mitchell, and Moffitt (1976) studied leadership style, subordinate personality, and task type as predictors of performance and satisfaction with supervision. The researchers trained several leaders in three conditions of leadership: task-oriented, human relations (social, high considerate) oriented, and both task and human relations orientation. The leaders were then matched with subjects who had both grouped according to their dogmatism levels. The groups performed tasks which were varied in difficulty and ambiguity. The results indicate that as task complexity and ambiguity increased, the traits of
group leaders interacted with the personality characteristics of the subjects. As a result, some "mismatching" occurred in several leader/member groups. For example, high human (social) relations-oriented leaders were not preferred by high dogmatic subordinates in difficult/ambiguous conditions, and high task--low human (social) relations-oriented leaders were disliked by low dogmatism subjects. In addition, it was discovered that as task complexity and ambiguity increased, all groups preferred leaders who were high in both human relations and task orientation.

Downs and Pickett (1977) researched contingency relationships between leadership styles and group compatibility on productivity and member satisfaction. More to the point, they hypothesized that group compatibility and leadership style do interact to produce significant differential effects both on group productivity and member satisfaction. They manipulated three levels of leadership: task and people (social) oriented, task-oriented, and no formal leader (unstructured). They also manipulated three types of groups; compatible-overpersonal groups were composed of members who have similar interpersonal needs and who particularly had a high need for interchange in the affection area; compatible-underpersonal groups were composed of members who had similar needs but who particularly want low interchange in affection; and incompatible-groups were formed of subjects who had conflicting interpersonal needs. The results supported the hypothesis. Among the findings that are salient to the present study were that for compatible-overpersonal groups, the task-
oriented leader was dissatisfying, the unstructured (no leader) condition was unproductive, and the task and people oriented leader proved to be the most productive and satisfying condition. For the compatible-underpersonal groups there were no significant differences in productivity or satisfaction. However, the least productivity for this group took place under the condition of a task and people (social) oriented leader. In addition, they were least satisfied with the unstructured (no leader) condition. Finally, the incompatible groups were on the whole more productive than the compatible-overpersonal, but the results do not indicate which is the most effective contingency for them.

**Leader Sex**

Fallon (1973) was among the first to address the sex variable relationship with leadership. The results indicated that male leaders were more influential than female leaders. This was true regardless of their source of authority or the feedback given. An examination of the postinteraction questionnaires supported the conclusion that this pattern of influence seemed to reside in sex-typed social expectancies. These expectancies considered leadership to be more a male than a female domain. A follow-up experiment by Fallon and Hollander (1976) had findings consistent with the first study. Regardless of the type of feedback, the male leaders were significantly more influential than the female leaders. In addition, female leaders significantly
decreased in influence after feedback, conversely male leaders maintained their influence.

In another study related to sex-typed social expectancies and group interaction, Bradley (1980) examined the potential for augmenting women's influence in male-dominated groups by increasing their demonstrated competence. It was found that sex and competence did indeed interact with the dominance variable. Statements directed toward females low in demonstrated competence were significantly more dominant than those directed toward the highly competent females. Messages directed toward low-competence females were significantly more dominant than those directed toward males low in competence. Highly competent females were treated more reasonably than their low-competence counterparts. Males were treated equally reasonably, regardless of competence. Statements directed toward low competence females were significantly more hostile than those directed at either high-competence females or to low-competence males. Messages directed toward males low in demonstrated competence were significantly more hostile than those directed toward high-competence males. The findings regarding influence and deviant points of view indicated that low-competence females were less influential than either high-competence females or low-competence males. Males who were highly-competent were significantly more influential than low-competence males. The study also explored interpersonal liking and opinion deviation. The findings indicated the male deviates were better liked than were female deviates regardless of competence. Highly competent male and female opinion
deviates were treated more positively than their low-competence counterparts. Also found was that the magnitude of the difference between reactions to high and low competence females was greater than the magnitude of the difference between reactions to males of varying competence. The research believes the results provide support for the expectation states theory and suggests a strategy of demonstrating task-related competence as an affective means of neutralizing any existing sex-based status difference. The findings also reveal that an individual's internal status may be a more powerful determinant of his treatment and influence in decision making groups than the person's sex. In addition, individuals demonstrating knowledge or skills perceived as valuable to the group are allowed to express deviant points of view without censure.

Yerby (1975) studied attitude, task, and sex composition as variables affecting female leadership in small problem-solving groups. With regards to reaction to the leader, Yerby found that groups with equal numbers of men and women with positive attitudes toward female leadership were most satisfied with their leaders. Groups with positive attitudes consisting of one female and three males and groups with negative attitudes and equal numbers of men and women were least satisfied with their leaders. On group satisfaction scales, negative female leadership attitude groups indicated less disagreement in their groups than did positive female leadership attitude groups. The author believes that disagreement was more extensive in positive-attitude than in the negative attitude group because the former groups were better
able to provide an atmosphere which would tolerate a diversity of opinion due to the group being comfortable with their female leader. The results for sex composition and group satisfaction indicated that groups of one female leader and three male group members were least satisfied with their group. Groups of four females were most satisfied with their level of disagreement but they were not as enthusiastic as were groups of equal numbers of men and women who disagreed but were more satisfied with their creativity and participation.

Despite the rise of women in management and other leadership positions, several studies have indicated that many individuals still believe that men are better leaders than women (Bass, Krusell & Alexander, 1971; Rosen & Jerdee, 1973; and Schein, 1973). Other studies have found evidence that indicates that men and women may differ in personality characteristics which could affect leadership style and effectiveness (Hoffman, 1972; O'Leary & Depner, 1975; Templeton & Morrow, 1972). In addition some studies have demonstrated that men and women differ in leadership behaviors and effectiveness (Bartol & Butterfield, 1976; Petty & Lee, 1975).

According to Dobbins and Platz (1986), these studies have been conducted under three different experimental conditions. For the most part, these conditions were: the laboratory, laboratory simulations, and field studies.

By presenting subjects with standardized descriptions of a male or female leader and then asking subjects to rate the behavior and effectiveness of the leader, laboratory experiments have investigated
the differences in male and female leadership. The results of the laboratory experiments, however, have been inconsistent. Some studies have revealed differences between ratings of male and female leaders in initiating structure, consideration, and effectiveness (Bartol & Butterfield, 1976; Haccoun, Haccoun and Sallay, 1978; and Welsch, 1979) while others found no difference (Butterfield & Powell, 1981; Rosen & Jerdee, 1973).

A second group of studies (laboratory simulations) compared male and female subjects leading groups on simulated work tasks such as completing puzzles or assembling desert survival kits. The results of laboratory simulations have been just as inconsistent as the previous type of studies. Some have reported differences between male and female leaders in effectiveness, initiating structure, consideration, and subordinate satisfaction (Jacobsen & Effertz, 1974; Rice et al., 1980); other studies have not (Bartol, 1974; Eskilson & Wiley, 1976; and Lee & Alvares, 1977).

The third group of studies are the field studies. These studies compared the effectiveness and behavior of male and female leaders in actual organizational settings. As with the two other areas, results of the field studies also are contradictory. Differences between male and female leaders are reported in some studies (Petty & Lee, 1975) but not in others (Adams, 1978; Day & Stodgill, 1972).

In sum, there has been a great deal of research into understanding the sex differences in leadership. But contradictions continue within
and across the three methodologies. To quote Bass in his revision of Stodgill's *Handbook of Leadership*:

The preponderance of available evidence is that no consistently clear pattern of differences can be discerned in the supervisory style of female as compared to male leaders, although individual studies have been able to find some positive indications, but not necessarily in the same direction. (1981, p. 494)

Because of the uncertainty in the field of sex differences in leadership, Dobbins and Platz (1986) conducted a meta-analytic review of 17 studies examining sex differences in leadership. Their review indicated that male and female leaders exhibit equal amounts of initiating structure and consideration and have equally satisfied subordinates. Male leaders are rated as more effective than female leaders, but only in laboratory settings. The authors conject that the sex of the leader may have affected ratings of effectiveness in laboratory studies because of the ambiguity existing in these settings. In field studies, raters have multiple opportunities to observe leader performance and can compare this performance with the performance of other organizational members. In the lab, however, raters do not have these opportunities. This may force raters to rely on their implicit sex theories (Ashmore & Del Boca, 1979) when evaluating the leader. As a result, they may construct behaviors that are consistent with their stereotypes and report these behaviors on the appraisal instrument (Cantor & Mischel, 1977; Feldman, 1981; and Shweder, 1975).
Because of their findings in their meta-analytic review, Dobbins and Platz propose a moratorium on research that simply compares male and female leaders on measures of initiating structure, consideration and effectiveness. They suggest that future research should instead examine the processes by which sex stereotypes and implicit sex theories bias raters' evaluations of men and women leaders. The authors hope that the acquired information can lead to elimination of discriminatory evaluation in this field for good.

Information Processing and Cognitive Responses

According to Mortensen (1972) information processing is a three-dimensional phenomenon that includes encoding/decoding, stages of cognition, and integration. Encoding is all of the activities involved in transforming information into messages. Decoding involves the transformation of sensations (or other messages to the individual) into meaning. There are four cognitive stages in Mortensen's model. The first is sensation, which refers to receiving signals from the environment (i.e., verbal messages, letters, or other types of communication). The second stage is central processing which is also known as perception. In this stage, data that have entered the cognitive system through sensation are assigned meaning and are prepared for entry into storage or memory. The third stage is storage, or memory, and this is indeed a complex and essential part of information processing. According to Mortensen and the research literature (Littlejohn, 1983), memory and perceptual organization
(central processing) are inter-related. Memory affects central processing, and because of this memory is facilitated by perceptual organization. Specific perceptions are not stored individually in separate containers in the brain. Rather, they are integrated into complex hierarchical structures of experiences and knowledge. Memory is facilitated by the hierarchical context most salient to the incoming messages or thoughts. In simpler terms, thinking and remembering are directly tied together. The final stage of Mortensen's information processing model is recall. An individual's memory is organized according to certain event models. Recall is closely linked to an individual's organization of past events. Recall is an essential link between decoding and encoding. While messages are being decoded, they are integrated into an organized structure of memories where they reside in association with other elements of the memory hierarchy. Encoding involves the stimulation of a part of the memory system and as a result certain data are recalled and used to formulate messages.

Mortensen's theories are by no means the only ones on information processing. Many other researchers have examined information processing and its various aspects (Crockett, 1965; Underwood, 1970; and Hale, 1980). But for the purposes of this study the Mortensen explanation is sufficient because it offers a standard mainstream explanation of the dynamic.

An information processing perspective that has gained a great deal of acceptance in the field of persuasion in the last two decades is the Cognitive Response Approach (Greenwald, 1968). This approach advocates
that even the persuasion that results from exposure to externally originated messages is due to the thoughts that the message recipient generates in response to the communication (Petty & Cacioppo, 1981). The thoughts generated in response to the communication are called **cognitive responses** and are the end result of the information processing dynamic. Followers of the cognitive response approach make the assumption that when an individual anticipates or receives a persuasive communication, an attempt is made to relate the information in the message (or expected message) to the preexisting knowledge that the individual has about the topic (Greenwald, 1968; Petty, Ostrom, & Brock, 1981; Petty & Cacioppo, 1981). This explanation correlates well with the Mortensen view.

Based on the premise of the cognitive response approach, a theory of information processing has recently been developed and it is of particular importance to the present study. The theory is based on the **Elaboration Likelihood Model** (ELM) (Petty & Cacioppo, 1981). Essentially, the model is explained through two distinct routes. The first is the central route. This should not be confused with Mortensen's central processing. The central route approach stresses the message-relevant information that a person has about attitude, object, or issue under consideration. The central route focuses on several different components of cognitive processing, among which are: how are arguments in a persuasive message comprehended and learned; the self-generation of information; and the combination and integration of information (Petty & Cacioppo, 1981). The individual view that
emerges from the central approach is that of a very thoughtful one. The recipient of a message concentrates on the message arguments, tries to understand them, and then evaluates the arguments. Some arguments will lead to favorable thoughts and others will lead to counter arguments. Finally, the individual integrates all the information into a coherent, congruent, and reasoned position. While the central route may not be completely rational or objective, for the most part it emphasizes a thoughtful review of the relevant message factors and the issue or object under consideration.

The second route to attitude change, according to the ELM, is the peripheral route. Via the peripheral route, attitude change is determined through such factors as: rewards or punishments; judgmental distortions that take place in perceiving the message; or the simple inferences that a person draws about why a speaker advocated a certain position (Petty & Cacioppo, 1981). The peripheral approach is not a very thoughtful one. If a message is associated with an attractive source, reward, or pleasant sensation, it is accepted. If the message takes a position that is too discrepant, it is rejected, regardless of the quality of the arguments presented. According to the authors of the model, part of the reason for the peripheral inner-workings is that people "observe" their own behaviors or physiological responses and infer what their attitude "must" be (Petty & Cacioppo, 1981). The authors further note that the difference in the two routes is not that the central route is rational and logical and the peripheral is not, because the
favorable thoughts and counter-arguments that a person generates in response to a message need not be logical or rational at all. They only have to make sense to the person who generates them. Indeed, it may be perfectly rational and logical to like or agree in some situations with things that lead to rewards or people with greater expertise on an issue. The real difference between the two routes has to do with the extent to which the attitude change that results from a message is due to active thinking about either the issue or the object relevant information provided by the message. In the central view, thinking about issue-relevant information is the most direct determinant of the direction and amount of attitude change produced. In the peripheral view, a phenomena known as "persuasion cues" account for attitude change. These persuasion cues are factors or motives inherent to the persuasion mode and setting that are sufficient to produce an initial attitude change "without any active thinking about the attributes of the issue or the object under consideration" (Petty & Cacioppo, 1981, p. 256). These "cues," in effect, allow a person to evaluate a communication or decide what position to adopt without engaging in any extensive cognitive work relevant to the issue under consideration.

What determines which route will be taken by an individual? Petty and Cacioppo (1981) claim that personal involvement is the key component to determining which route will be taken in processing information. According to Petty and Cacioppo, when involvement is low the peripheral route is the most prevalent way to processing
information. However, as involvement increases the central route becomes the more dominant route. Indeed, at high levels of involvement it is most likely the only route used to process information, though there is some disagreement in this belief (Stiff, 1986).

Chaiken (1980) has added some further insight to present day theories of information processing. Unlike Petty and Cacioppo, Chaiken has not developed a model, but instead has offered further comment on the aspect of central and peripheral routes. Chaiken refers to the two views of information processing as systematic and heuristic.

According to Chaiken's systematic view, recipients exert considerable cognitive effort in assessing the validity of the overall message conclusion. Individuals actively attempt to comprehend and evaluate the arguments and assess their validity in relation to the conclusion. This would be similar to the central route of the elaboration likelihood model (ELM). In the heuristic mode, the recipients exert comparatively little cognitive effort in judging message validity. Instead of processing argumentation, the individuals usually rely on more accessible information such as source identity or other non-content cues in deciding whether to accept a conclusion. This is much like the peripheral route. According to Chaiken, individuals will use a systematic approach when the importance of a reliable decision outweighs the convenience of a quick and effortless decision. Conversely, individuals will use a
heuristic view when the convenience of a fast and simple decision outweighs the factors for a reliable one.

There are many published studies on information processing and persuasion in such areas as: forewarning of message content (McGuire & Papageorgis, 1962); issue involvement (Petty & Cacioppo, 1979); number of message evaluators (Petty, Harkins, & Williams, 1980); source expertise (Gillig & Greenwald, 1974; Hass, 1981; Sternthal, Dholakia & Leavitt, 1978); distraction (Petty, Wells, & Brock, 1976); message repetition (Cacioppo & Petty, 1979); number of arguments and sources of a message (Harkins & Petty, 1981); and uses of rhetorical questions (Petty, Cacioppo, & Heesacker, 1981). This represents only a sampling of the cognitive studies done in the area of persuasion.

In addition to persuasion, research using theories of information processing or cognitive response analyses has been carried out in several areas. Information processing has been used to study consumer expectation in selling encounters (Sujan, Bettman, & Sujan, 1986). It has been used to examine television commercial wearout (Calder & Sternthal, 1980). Sparks (1986) has developed a scale to assess cognitive responses to certain types of motion pictures. An additional study on information processing from the screen media looked at the dynamic from a psycho-linguistic approach (Corcoran, 1981). Information processing has also been explored in relation to its role in instructional and teaching methods (Winn, 1980; Bovy, 1981). Finally, the relationship of receiver apprehension and cognitive complexity (a structural aspect of
information processing) has been examined (Beatty & Payne, 1981). Again, these studies are only a sample of the wealth of research that has been amassed using the principles of information processing. The information processing approach to studying attitudes and related areas has yielded an impressive and growing body of data. The application of cognitive response approach analysis to other areas of human communication seems well justified.

**Problem**

The field of leadership contingency and effectiveness is an area that is ripe for exploration involving cognitive processes. In particular, it would be important to know if certain types of leadership style (task oriented or social oriented) might involve different types and direction (valence) of cognitions and affect the overall group performance in completion of a task? Furthermore, does leader gender interact with these leadership styles to affect participants' cognitions and performance of the task?

**Hypotheses**

Task oriented leaders should be able to direct their members' cognitions toward a central or systematic type of thinking. Members' thoughts will tend to elaborate upon the elements necessary for the most efficacious completion of the task at hand. A more concise definition of task oriented thinking will be given in operational definitions section. Hypothesis one predicts:
H1: Task oriented leadership will produce more central (task oriented) subject/group cognitions than will social oriented leadership.

Social oriented leaders should in turn direct their groups along more peripheral or heuristic routes of processing. A socially oriented leader will be more interested in maintaining a pleasant and harmonious environment in which to work. Because the leader emphasizes group continuity, task performance may be seen as secondary. In light of this, the group may take a heuristic or peripheral route to processing cognitions about the task. Thus, the groups' cognitions should be mostly social oriented and reflect thoughts about the group as a whole and feelings toward the leader and individual members. A more specific definition of social oriented thinking will appear in the operational definitions section.

Hypothesis two states:

H2: Social oriented leadership will produce more peripheral (social oriented) subject/group cognitions than will task oriented leadership.

The background research offers no clear prediction as to what other phenomena will occur. Because of this, several research questions need to be addressed:

RQ1: Which type of cognitions (central or peripheral) will correlate with group task performance?

RQ2: What is the relationship for overall tendencies of subject/group and individual cluster items?

RQ3: What is the affective relationship for overall cognitive tendencies of subjects/group and individual cluster items?
RQ4: Will the sex of the leader interact at all with the type of leadership to affect type and direction of subject/group cognitions? In addition, how will this affect subsequent task performance?

Operational Definitions

**Gender** - male or female.

**Task Oriented Leader** - The task oriented leader was trained by the researcher with the aid of sources in the field of leadership research. Essentially, the task oriented leader was concerned exclusively with the succinct, proper, and timely completion of the task at hand. At no time did the leader exchange social pleasantries or attempt to enhance group harmony. However, the leader was neither mean spirited nor dogmatic in the implementation of his or her duties (see Appendix A).

**Social Oriented Leader** - The social oriented leader was trained by the researcher with aid of sources in the field of leadership research. The social oriented leader was indeed concerned with an effective completion of the task. However, the leader also was concerned with the feelings of the group. The social oriented leader did engage in lengthy introductions, exchange pleasantries and compliments, and generally enhance the pleasantries of the groups' working conditions (see Appendix B).

**Task Performance** - The task implemented and measured was the Taylor campus survival kit (1987). This task is ideal because it is
easily done, has real world applications, and can be measured accurately for inter-group comparisons.

**Cognitive Responses** - The following cognitive responses were measured: Total thoughts; overall favorable, negative, and neutral thoughts; favorable, negative, and neutral thoughts about the group; favorable, negative, and neutral thoughts about the leader; favorable, negative, and neutral thoughts about the task; central task-oriented thoughts; peripheral social-oriented thoughts and overall cluster tendencies were measured. Group, leader, and task relevant thoughts were scored by the subjects themselves. Favorable, negative, and neutral thoughts were also scored by the subjects. For each respondent, the total number of group, leader, and task thoughts were combined to form the stimulus cluster. The stimulus cluster represents the actual thinking the subject did with regard to the small group dynamic. Since there are no prior research studies on which to guide definitions as to what actually is considered thinking about the small group dynamic, the present research will consider the thoughts in the stimulus cluster to represent a somewhat crude form of cognitive gestalt for group interaction thoughts. From the body of thoughts that make up the cluster, three types of thoughts were measured. The first type was the central task oriented thought. This type of thought concerned itself with the merits of the task. A subject thinking task oriented thoughts would elaborate upon the qualities or deficiencies of the items that made up the Taylor campus survival kit and how they should be ranked. Task oriented thoughts
would also be thoughts concerning other group members' suggestions about certain item rankings. Such examples of central task oriented thought included the following: "I didn't really think that a stop watch was necessary;" "If I went back and looked at the list again, I would probably change some of the answers;" "Why a personal computer?" "It depends on the student's major;" "Why does he keep demanding that we rank the stereo first?" The second type of thought to be classified from the cluster was the peripheral social oriented thought. This type of cognition concerned itself with the respondents' thoughts about the leader and other group members. These thoughts may have been in reference to the task but more centered on personal social affect. The social oriented thoughts also reflected respondents feeling about the task, whether they enjoyed it or not. Examples of peripheral social oriented thoughts were: "Patty is a good leader;" "Ken has a weird sense of humor;" "Anita is cute;" "I don't like this group;" "This was fun;" "That girl keeps blabbing on about her stereo;" "We're all from different backgrounds." The final type of cognition measured in the cluster was the non-denominational. These thoughts were neither task oriented nor social oriented and are inconsequential in regards to any specific analysis. Examples of such thoughts included any type that questioned the real purpose of the study or any extremely vague statements like: "What are we doing?" "Where's the researcher?" Other non-denominational thoughts included elaborations on personal feelings such as: "I like popcorn;" "Thinking about my freshman
"year" or "Dorm life is the pits." While these thoughts may encompass the basic task objective in part, they are not specific enough to be considered actual task oriented or social oriented thoughts and cannot be measured as such. The overall procedure for scoring and coding subject cognitions was done according to the directions of Cacioppo and Petty (1981).

**Manipulation Checks** - Five dependent measures each were administered to the subjects on leader task orientation and leader social orientation.

**Ancillary Measures** - Five dependent measures each were administered to the subjects on leader attractiveness, likability, and credibility.

**Control** - Twelve subjects were individually administered the Taylor campus survival kit and subsequently asked to list their thoughts while completing the task.

**Identification of Variables**

**Independent Variables** - Leader sex, leadership style, respondent sex.

**Dependent Variables** - Task performance, subjects' cognitive responses.
METHODOLOGY

The sample consisted of students drawn from several basic speech classes at the University of Central Florida during the Fall of 1987. Because of a low response rate, supplementary subjects were recruited from other communication related courses also being taught at the University of Central Florida in the Fall of 1987. Additionally, 12 subjects from one public relations class comprised the control group. One hundred and sixty one students did sign up to participate in the study. The subjects assigned themselves to the particular group that best fit their time schedules. The groups were purposely composed of six member (3 male, 3 female) groups in order to account for possible subject attrition. In reality, the groups were constructed as four member (2 male, 2 female) groups. Extra subjects were administered a survey on consumer involvement and debriefed. The study was designed for four experimental conditions: male-leader task oriented; female leader-task oriented; male-leader social oriented; female-leader social oriented. There were to be nine groups per condition. Despite an adequate number of volunteers, only 29 groups were completely filled at the outset of implementation. Additional problems were encountered. In spite of the fact that they had written down their phone numbers when signing up so research assistants could call and remind them of the appointment the night before, a number of subjects did not show up for their scheduled times.
Attempts were made to fill in the missing slots by recruiting passing bystanders to be subjects in the study. Also, subjects who had volunteered for partially filled groups were contacted and rescheduled when possible in full groups to add an even greater insurance that these conditions would have sufficient numbers for experimentation. This procedure yielded a final total of 22 groups for the four experimental conditions.

Each experimental group had up to 30 minutes to complete the task. The control group was given up to 10 minutes. There was little reason to doubt that the subjects could recall any thoughts they'd had during the previous 30 minutes since Cacioppo and Petty (1981) had cited several instances in which subjects had recalled thoughts in experimental conditions that far exceeded the present study's maximum time limit. Upon completion of the task, group members and control subjects were given seven minutes to list all thoughts they could recall from the beginning of the task until its finish. It should be noted that all the control subjects were finished listing their thoughts by the end of 3 1/2 minutes. After listing their thoughts, all subjects were asked to score their thoughts on two dimensions. The first dimension was an affective direction. The subjects put a plus, minus, or zero next to each thought they had which they felt was either positive, negative, or neutral. The second dimension was cluster stimulus. The subjects were asked to put a G next to any thought which they felt to be about the group, an L next to any thought they felt was about the leader, and a T next to any thought they felt to be about the
task. In the control group, subjects were asked only to put T next to any thought about the task. Any thought that did not fall into any one of the three categories was to be left unmarked. This allowed the judges to accurately measure each individual cluster since the respondents would best know the origin of their own cognitions. After the completion of the thought listing measurement, the experimental subjects were administered a questionnaire containing the manipulation checks and the ancillary measures. The questions consisted of 10 nine-point semantic differential scales. The subjects were then debriefed and thanked for their time. The control group was debriefed after the thought listing was complete.

The leaders were two males and one female who were recruited on the suggestions of a professor in the Department of Communication at the University of Central Florida. Two male leaders were necessary because the first choice could not appear for one of his block of sessions due to class conflicts. While two different leaders for one set of conditions can introduce extraneous variables, it also offers the chance to find out if the relationships hold true when different individuals are used in the manipulation of variables. The second leader took part in only two groups. The leaders were trained in accordance with the intended manipulations. In each condition, the leaders directed and lead the discussion and resulting decisions of the group. However, at no time did the leaders offer any additional input relevant to the task at hand other than compliments and statements to
open discussion in the social condition only. All decisions were made by group consensus.

The data were collected during the last two weeks of September, 1987. It was collected over six days, three days in the middle of each week. There were two three-hour experimental blocks each day. The morning session consisted of three groups, one each hour from 9 a.m. through 11 a.m. All experimental treatments and data collection were completed usually within 40 minutes allowing for no subject interaction between different groups. The task-oriented and social-oriented conditions were alternated with each group. However, all female leader conditions were done in the morning sessions to comply with the female leader's work and class schedule. The afternoon sessions were the same format as the morning and began at 1 p.m. and ran through 3 p.m. All afternoon sessions consisted of male leaders.

Three independent reviewers who were blind to the experiment served as judges on the cognitive responses. One judge was male and the other two were female. The judges were trained in accordance with the definitions of the dependent measures. However, the judges were trained verbally and subsequent results suggest that the instruction was not sufficient (see Discussion section). Both leaders and the reviewers were paid for their time.
RESULTS

Manipulation Checks

A one way analysis of variance was used to check if the independent variables were properly perceived by the subjects in accordance with their intended manipulation. The data were examined both from an individual and group perspective.

It was found that socially oriented leaders were perceived by individuals to be more socially oriented than task leaders. This was true for both male leaders (MSOX = 32.12, MTOX = 23.8, DF 1.42, F = 41.03, p < .001) and female leaders (FSOX = 31, FTO = 24.75; DF 1.42, F = 17.57, p < .001) and female leaders (FSOX = 124, FTOX = 99, DF 1.9, F = 13.24, p < .01).

Several extraneous variables were examined to see if they had been perceived differently in certain leader conditions, thus contaminating the study.

Individual perception of leader credibility was found to not be significantly different between task or social conditions for the female leader (FSOCX = 23.05, FT0CX = 21.55; DF 1.36, F = 3.02, NSD). However, for male leaders individual perceptions of credibility for the socially oriented leader were higher than ratings of the task oriented leader (MSOCX = 22.54, MTOCX = 20.63, DF 1.41, F = 4.35, p < .05). Because several individuals failed to fully complete their credibility indices, group perceptions of credibility could not be
compared with any validity. Finally, there was no significant difference in perception of leader credibility based on differences in leader sex (FLCX = 27.34, MLC = 31.69, DF = 1.79, F = 0.79, NSD).

Individual perceptions of leaders' attractiveness via social or task orientation were not significantly different for male leaders (MSOX = 6.30, MTOAX = 5.60, DF 1.41, F = 3.64, NSD) or female leaders (FSOAX = 6.95, FSOA = 6.95, DF = 1.42, F = .0004, NSD). This was also true for group perceptions of male leaders (MSOAX = 25, MTOA = 22.40, DF 1.8, F = 2.44, NSD) and female leaders (FSOAX = 27.80, FTOAX = 27.83, DF 1.9, F = .0004, NSD). It was also found that female leaders were perceived by individuals to be more attractive than male leaders (FLAX = 6.95, MLAX = 5.97, DF 1.85, F = 12.91, p <.001).

Individual perceptions of leader likability were found to be significantly different in the intuitively expected direction. Social leaders were better liked than task leaders. This finding was true for male leaders (MSOLX = 7.58, MTOLX = 6.50, DF 1.42, F = 6.49, p = .05) and female leaders (FSOLX = 8.35, FTOLX = 7.25, DF 1.42, F = 9.08, p <.005). Surprisingly, group perceptions of leader likability were not significantly different between the social and task conditions for male leaders (MSOLX = 30.33, MTOLX = 26, DF 1.9, F = 4.29, NSD) or female leaders (FSOLX = 33.40, FTOLX = 29, DF 1.9, F = 3.27, NSD). Female leaders were liked significantly more than male leaders by individuals (FLLX = 7.75, MLL = 7.09, DF 1.86, F = 4.83, p <.05).
Task Performance

Group rankings of items on the Taylor campus survival kit were compared with pre-existing rankings made by a group of students involved in campus leadership and student government. Taylor (1987) has argued that a correct ranking of items can be determined by surveying successful college students' viewpoints and constructing the ranking based on these attitudes. Intuitively, student leaders have done more than just survive campus life, they have mastered it, thus their choices have a reasonably strong claim to be valid and correct. Each of 20 items on the survival list is compared to the master ranking. A score is assigned for each item based on how many spaces it deviates from the master. Examples would be if an item is ranked 2 by the master and 2 by the group, a score of 0 would be assigned, or if an item is ranked 10 by the master and 5 by the group, a score of 5 is assigned and so on. Scores for all 20 items are added up and an overall efficiency or performance score is determined. The lower the score, the more efficient the group has performed the task.

Two way analysis of variance on task performance indicated no significant differences in main effect for either leader sex (MLX = 43.98, FLX = 51.54, DF 1.18, F = 1.82, NSD) or leadership condition (SLX = 52.58, TLX = 43.98, DF 1.18, F = 1.82, NSD). A marginally significant interaction was found between leader sex and condition (DD 1.18, F = 3.79, p < .08). Further Newman-Keuls analysis of condition performance means indicated that the female social condition
results were significantly more incorrect than all other conditions (p < .01) (see Table 1).

One way analyses of variance were performed between performance in all leader conditions and performance by individuals in the control group. The results indicated significant differences exist among the five groups (DF 4.29, F = 3.05, p < .05). However, Newman-Keuls analysis revealed no significant differences between group means. This may be because some conditions had only five scores in their cell. This can render questionable results using analysis of variance and thus subsequent probing of the F can lead to contradictory findings. This hazard will be discussed in depth in the discussion section. To compensate for the insignificant Newman-Keuls results, individual one way anovas were conducted between the control group and the four treatment conditions. Difference between the control group and the female social condition was non significant (\( \bar{X} = 67, FSO\bar{X} = 63, DF 1.15, F = 0.095, \text{NSD} \)). The control group did differ significantly from the female task condition (\( \bar{X} = 67, FTO\bar{X} = 42, DF 1.16, F = 5.34, p = .05 \)) and the male social condition (\( \bar{X} = 67, MSO\bar{X} = 42, DF 1.16, F = 5.68, p < .05 \)). There was marginal significance between the control and the male task condition (\( \bar{X} = 67, MTO\bar{X} = 45.8, DF 1.15, F = 3.25, p < .09 \)).

Cognitive Tendencies Toward Certain Cluster Items

In order to examine the cognitive patterns of group members, certain scales and indices had to be created. While it may seem
TABLE 1
TASK PERFORMANCE AMONG TREATMENT GROUPS
P < .01

<table>
<thead>
<tr>
<th></th>
<th>SOCIAL-ORIENTED</th>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
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</thead>
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<td>B</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.
reasonable to examine raw numbers of certain cognitions, such as leader thoughts or affective group thoughts, it actually is not a very reliable or even valid method of analyses (Cacioppo & Petty, 1981 (d)). Because some individuals tend to have a higher need to cognate than others (Cacioppo & Petty, 1982; Cacioppo, Petty & Morris, 1983; Petty & Cacioppo, 1986), it is necessary to analyze cognitive patterns from thought ratios or indices which this study refers to as tendencies. In all cases except the supplementary Raw Peripheral-Raw Central examination, all cognitive patterns were examined by subject or group tendency to think in an intended affective direction or about a specific cluster construct. Thus, statistical means do not reflect actual levels of raw cognitions, but only scaled tendencies.

In order to examine tendencies to think about certain cluster items (i.e., Group, Leader, or Task cognitions) index ratios were created by subtracting the two other cluster item scores from the one being analyzed. For example, creating a leader index would be done by subtracting subjects group and task scores from their leader score. This is done for each subject. Then the difference between the highest and lowest subjects' scores is used to compute a scale. For example, the highest leader score is five and the lowest is minus 11. This would create a 17 point scale since zero is a possibility, as it is in all tendencies. The score of five would become a 17 and the minus 11 would be a one. Such scores as minus two would become a 10 or zero a 12. Then these scores are examined with ANOVAS.
In scaling affective measures, favorable thoughts would have negative thoughts subtracted from them and then be scaled. Neutral thoughts would have both favorable and negative thoughts subtracted and then be scaled.

For overall tendencies to think about certain cluster items over other cluster items, whether specifically or affectively, the data are simply analyzed by using the scales of all the previous conditions (i.e., neutral affective tendencies of all cluster items by all leader conditions is pooled to determine an overall index for each item, regardless of treatment condition) and creating an overall scale.

To examine the task-social cognitive dynamic, social (peripheral) cognitions were subtracted from task (central) cognitions and then scaled. This is all in accordance with Cacioppo and Petty suggestions (1981 (d)).

A three way analysis of variance on individuals total thoughts yielded no significant differences for leader sex (FLX = 7.80, MLX = 8.32, DF 1,80, F = 0.644, NSD). There was a significant difference for leader orientation (SLX = 8.72, TLX = 7.40, DF 1,80, F = 4.11, p <.05). Individuals in the social oriented condition had more total thoughts than task oriented individuals. Differences for member sex was marginally significant (FX = 8.66, MX = 7.43, DF 1,80, F = 3.47, p <.07). Females tended to have more total thoughts than males. There were no significant interactions.

Analyses of individuals' overall favorable affective thought tendencies produced no significant difference for leader sex (FLX =
Individual overall neutral affective thought tendencies showed no significant differences for leader sex (FLX = 12.05, MLX = 11.31, DF 1, 180, F = 0.984, NSD), leader orientation (SLX = 11.51, TLX = 11.85, DF 1, 180, F = 0.208, NSD), or respondent sex (FX = 11.42, MX = 12.07, DF 1, 180, F = 0.493, NSD). There was a significant interaction between leader sex and orientation (DF 1, 180, F = 6.29, p <.05). Newman-Keuls probing of the F indicated that female task oriented subjects had higher neutral affective tendencies that did all other conditions (see Table 2).

A two way analysis of variance for group total thoughts yielded no significant differences for leader sex (FLX = 30.82, MLX = 33.3, DF 1, 118, F = 0.32, NSD), leader orientation (SLX = 34.9, TLX = 29.63, DF 1, 118, F = 2.08, NSD) or the interaction between the two (DF 1, 118, F = 1.12, NSD).

Examination of overall group favorable affective cognitions by leader sex (FLX = 7.36, MLX = 7.85, DF 1, 118, F = 0.0529, NSD), leader orientation (SLX = 8.45, TLX = 6.76, DF 1, 118, F = 0.642, NSD) found no significant differences. This was also true for any interactions (DF 1, 118, F = 0.592, NSD).

Analysis of group overall neutral affective tendencies produced no significant differences for leader sex (FLX = 18.23, MLX = 15.26, DF
<table>
<thead>
<tr>
<th></th>
<th>Female Social-Oriented</th>
<th>Male Task-Oriented</th>
<th>Male Social-Oriented</th>
<th>Female Task-Oriented</th>
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<td>C</td>
<td>B</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.
There was a significant interaction between leader sex and orientation (DF 1,18, F = 6.41, p <.05). Newman-Keuls analysis revealed female task oriented groups had higher neutral affective tendencies than did all other conditions (see Table 3).

The cluster consisted of three components: subject's thoughts about the leader, subject's thoughts about the group, and subject's thoughts about the task. Three way analyses of variance were performed for thoughts about each cluster item and its relationship with leader sex, leader orientation, and sex of respondent.

There were no significant differences found for subjects' leader cognitions and leader sex (DF 1.80, F = 0.141, NSD) or orientation (DF 1.80, F = 1.97, NSD). There was a marginally significant relationship between respondents' sex and leader cognition. Males tended to think about the leader more than females (M_M = 10.9, F_M = 9.81, DF 1.80, F = 2.96, p <.10) regardless of condition. There were no significant interactions found for subject leader cognitions.

There were no significant relationships found for subject's thoughts about the task and leader sex (DF 1.80, F = 0.151, NSD), or leader orientation (DF 1.80, F = 0.140, NSD). There was a marginally significant interaction for task cognitions, leader orientation and respondent sex (DF 1.80, F = 3.68, p <.06). Newman-Keuls analysis revealed that socially oriented females thought more about the task than all other conditions (see Table 4).
### TABLE 3

GROUP NEUTRAL AFFECTIVE OVERALL TENDENCY TOWARD CLUSTER ITEMS BY LEADER SEX AND ORIENTATION

$P < .01$ UNLESS OTHERWISE NOTED

<table>
<thead>
<tr>
<th></th>
<th>MALE TASK-ORIENTED</th>
<th>FEMALE SOCIAL-ORIENTED</th>
<th>MALE SOCIAL-ORIENTED</th>
<th>FEMALE TASK-ORIENTED</th>
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<tr>
<td></td>
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<td>B</td>
<td>C</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.

1. Male social-oriented differed from female social-oriented at .05.
2. Female task-oriented differed from male social-oriented at .05.

### TABLE 4

INDIVIDUAL TENDENCIES TO THINK ABOUT THE TASK

$P < .01$ UNLESS OTHERWISE NOTED

<table>
<thead>
<tr>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
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</thead>
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<td>MALES</td>
<td>FEMALES</td>
<td>MALES</td>
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<td>B</td>
<td>C</td>
<td>A</td>
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</table>

Means with common subscript do not differ from each other.

1. Task-oriented males differ from social-oriented males at .05.
2. Social-oriented females differ from task-oriented males at .05.
There were no significant relationships found for subjects' thoughts about the group and leader sex (DF 1,80, F = 0.077, NSD), leader orientation (DF 1,80, F = 1.52, NSD), and respondent's sex (DF 1,80, F = 0.00006, NSD). There was a significant interaction for group cognitions and leader orientation and respondents' sex (DF 1,80, F = 9.22, p < .05). Newman-Keuls analysis further revealed that task oriented females thought more about the group than all other conditions and all conditions thought more about the group than the social oriented females (see Table 5).

Individual cluster items were further examined to determine if there were any relationships between each cluster items and group cognitions.

There were no significant differences in group leader cognitions and treatment conditions for either leader sex (FLX = 13.85, MLX = 13.06, DF 1,18, F = 0.69, NSD) and leader condition (SLX = 11.75, Tlx = 15.15, DF 1,18, F = 1.30, NSD). There were no significant interactions (DF 1,18, F = 0.417, NSD).

There were no significant differences in group task cognitions and treatment conditions for either leader sex (FLX = 13.6, MLX = 10.53, DF 1.18, F = 0.19, NSD) or leader orientation (SLX = 12.13, TLX = 10.26, DF 1.18, F = 0.537, NSD). There were no significant interactions (DF 1.18, F = 0.261, NSD).

There were no significant differences in groups' tendencies to think about the group (i.e., group cognitions) for either leader sex (FLX = 9.72, MLX = 10.1, DF 1.18, F = 0.015, NSD) or leader orientation
<table>
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<th>SOCIAL-ORIENTED FEMALES</th>
<th>TASK-ORIENTED MALES</th>
<th>SOCIAL-ORIENTED MALES</th>
<th>TASK-ORIENTED FEMALES</th>
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Means with common subscript do not differ from each other.
Analysis of variance with repeated measures on one factor (cluster item) was conducted to examine individual overall tendencies to think about certain cluster items.

An examination of the relationship for individual overall tendencies to think about certain cluster elements via orientation, respondents' sex, and type of cluster element (i.e., leader, task, and group) revealed no significant differences for leader orientation \(SLX = 12.73, TLX = 13.05, DF 1.87, F = 2.07, NSD\) or sex of respondent \(FX = 12.72, MX = 13.06, DF 1.87, F = 2.27, NSO\). There were significant differences between overall tendencies to think about certain cluster items \(GX = 14, LX = 10.40, TX = 14.27, DF 2.84, F = 44.32, p < .001\). Newman-Keuls analysis showed that individuals tended to think about the group or the task more than the leader. The group and task thoughts did not differ (see Table 6). Finally, a significant triple interaction was found between orientation, subject sex, and type of cluster cognition \(DF 2.168, F = 4.27, p < .05\). Newman Keuls analysis indicated that leader cognitions, regardless of orientation or subject, were the least thought about cluster type (see Table 7).

Individual tendencies to think about certain cluster items were further examined with a three way ANOVA for leader sex, subject sex, and type of cluster cognition with repeated measures on cluster item. There were no significant differences for leader sex \(FLX = 12.98, MLX\)
**TABLE 6**

INDIVIDUAL TENDENCIES TO THINK ABOUT CERTAIN CLUSTER ITEMS
P<.01 UNLESS OTHERWISE NOTED

<table>
<thead>
<tr>
<th>LEADER</th>
<th>GROUP</th>
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</table>

Means with common subscript do not differ from each other.

1. Group differs from Leader at .05.
### TABLE 6
INDIVIDUAL TENDENCIES TO THINK ABOUT CERTAIN CLUSTER ITEMS
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<td>14.27</td>
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<td>B</td>
<td>A</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.

1. Group differs from Leader at .05.
There were significant differences between overall tendencies to think about certain cluster items ($G\bar{X} = 14$, $L\bar{X} = 10.38$, $T\bar{X} = 14.27$, $DF = 2.84$, $F = 47.05$, $p < .001$). Newman-Keuls probing revealed that, just as in the case of leader condition, subjects thought about the group and task more than the leader. Group and task cognitions did not differ (see Table 7).

Groups' overall tendencies to think about certain cluster items were examined using a two way ANOVA for repeated measures.

An analysis of group overall tendencies to think about certain cluster items by leader orientation revealed no significant difference for type of orientation ($SLX = 23.90$, $TLX = 25.18$, $DF 1.20$, $F = 1.59$, NSD). There were significant differences in overall tendencies to think about certain cluster items ($G\bar{X} = 29$, $L\bar{X} = 14.5$, $T\bar{X} = 30.13$, $DF 2.40$, $F = 32.34$, $p < .001$). Newman Keuls probing indicated that, as in the case of individual cognitions, group cognitions were more predominant for group and task tendencies than for leader tendencies. Group and task cognitive tendencies did not differ (see Table 8). There was no interaction ($DF 2.40$, $F = 0.755$, NSD).

Analysis of variance for group overall tendencies to think about certain cluster items by leader sex yielded no significant effect for leader sex ($FL\bar{X} = 24.95$, $MLX = 24.15$, $DF 1.20$, $F = 0.581$, NSD). Again significant differences were found between tendencies to think about certain cluster items ($G\bar{X} = 29$, $L\bar{X} = 14.5$, $T\bar{X} = 30.12$, $DF 2.40$, $F = 31.24$, $p < .001$). Newman-Keuls analysis found that group and task
<table>
<thead>
<tr>
<th>LEADER</th>
<th>GROUP</th>
<th>TASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>29</td>
<td>30.13</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
cognitive tendencies were much higher than leader cognitions but did not differ between each other (see Table 8). There were no interactions (DF 2.40, F = 0.047, NSD).

Pearson Product Moment correlations were run to further understand the relationships among the various cognitive tendencies. Several significant correlations were found for both individual and group cognitive cluster tendencies. Group cognitive tendencies showed a positive relationship between group and leader tendencies ($r = .59, p < .01$) and an inverse relationship for group - task cognitions ($r = -.87, p < .001$) and leader - task cognitions ($r = -.91, p < .05$). Overall individual cognitive tendencies showed inverse correlations for group - task ($r = -.76, p < .001$) and leader - task ($r = -.25, p < .02$) tendencies. Examination for respondent sex produced significant inverse relationships for females on group - task ($r = -.82, p < .001$) and leader - task ($r = -.31, p < .05$). For males there was a significant inverse relationship for group - task ($r = -.69, p < .001$) but surprisingly males did not follow the established pattern of significant inverse correlations for leader - task tendencies.

**Affective Cognitive Tendencies Toward Cluster Items**

Three way analyses of variance were performed on individuals' favorable affective cognitive tendencies toward each cluster item. The three variables were leader sex, leader orientation, and respondent sex.
An examination of individual favorable affective tendencies toward the group revealed no significant differences for leader sex ($FLX = 4.6$, $MLX = 4.36$, DF 1.80, $F = 0.565$, NSD) or respondent sex ($FX = 4.37$, $MX = 4.6$, DF 1.80, $F = 0.487$, NSD). There were no interactions. There was a marginally significant relationship for leader condition ($SLX = 4.76$, $TLX = 4.20$, DF 1.80, $F = 3.33$, $p = <.08$).

Individuals' favorable affective tendencies toward the leader indicated no significant differences for leader sex ($FLX = 4.13$, $MLX = 4.05$, DF 1.80, $F = 0.224$, NSD), leader orientation ($SLX = 4.17$, $TLX = 4.008$, DF 1.80, $F = 0.896$, NSD) or subject sex ($FX = 4.18$, $MX = 3.99$, DF 1.18, $F = 1.08$, NSD). There was marginal significance for interaction of leader sex and subject sex (DF 1.80, $F = 2.90$, $p <.10$). Newman-Keuls probing of the F revealed that males had the least favorable affective leader thought tendencies while under male leadership. Females under male leadership had the highest affective leader thought tendencies (see Table 9). There were no other significant interactions.

Individuals favorable affective tendencies toward the task showed no significant differences for leader sex ($FLX = 4.72$, $MLX = 5.08$, DF 1.80, $F = 0.156$, NSD), leader orientation ($SLX = 4.93$, $TLX = 5.12$, DF 1.80, $F = 0.488$, NSD), and respondent sex ($FX = 5.1$, $MX = 4.70$, DF 1.80, $F = 0.266$, NSD). There was a significant triple interaction between leader sex, orientation and subject sex (DF 1.80, $F = 4.14$, $p <.05$). Newman-Keuls analysis indicated that task oriented females had significantly higher favorable affective tendencies toward the task.
# TABLE 9

**INDIVIDUAL FAVORABLE-NEGATIVE AFFECTIVE TENDENCIES TOWARD THE LEADER BY LEADER SEX AND RESPONDENT SEX**

\( P < .01 \)

<table>
<thead>
<tr>
<th>MALE LEADER MALES</th>
<th>FEMALE LEADER FEMALES</th>
<th>FEMALE LEADER MALES</th>
<th>MALE LEADER FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8</td>
<td>4.07</td>
<td>4.19</td>
<td>4.25</td>
</tr>
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<td>C</td>
<td>B</td>
<td>AB</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
than did any other condition. It is also worthy of note that males under both female-task and female-social conditions had the fewest favorable affective thoughts toward the task (see Table 10).

Individual favorable affective tendencies for the overall cluster in general showed no significant differences for leader sex ($F_{LX} = 8.59$, $ML_{LX} = 8.71$, $DF = 1.80$, $F = 0.0546$, NSD), or leader orientation ($SL_{LX} = 8.86$, $ML_{LX} = 8.44$, $DF = 1.80$, $F = 0.663$, NSD). There were no significant interactions.

Group favorable affective tendencies to think about the task revealed no significant differences for leader sex ($FL_{LX} = 4.9$, $ML_{LX} = 9.43$, $DF = 1.18$, $F = 0.247$, NSD), leader orientation ($SL_{LX} = 5.77$, $TL_{LX} = 9.6$, $DF = 1.18$, $F = 0.652$, NSD) or the interaction of the two ($DF = 1.18$, $F = 0.386$, NSD).

Group favorable affective tendencies to think about the group did not differ for leader sex ($FL_{LX} = 9.4$, $ML_{LX} = 9.06$, $DF = 1.18$, $F = 0.0796$, NSD), leader orientation ($SL_{LX} = 6.09$, $TL_{LX} = 4.40$, $DF = 1.18$, $F = 1.99$, NSD), or any interaction between the two ($DF = 1.18$, $F = 0.538$, NSD).

Favorable affective tendencies of the group about the leader showed no significant differences for leader sex ($FL_{LX} = 4.36$, $ML_{LX} = 4.2$, $DF = 1.18$, $F = 0.0466$, NSD), leader orientation ($SL_{LX} = 4.7$, $TL_{LX} = 3.86$, $DF = 1.18$, $F = 1.14$, NSD) or the interaction between the two ($DF = 1.18$, $F = 0.966$, NSD).

An examination of favorable affective tendencies for the overall cluster (task, group, and leader thoughts) by the group indicated no
<table>
<thead>
<tr>
<th></th>
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<th>Subscript</th>
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<td><strong>ORIENTED MALES</strong></td>
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<td></td>
</tr>
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<tr>
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<td><strong>ORIENTED FEMALES</strong></td>
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<td></td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
significant differences for leader sex (FLX = 7.36, MLX = 7.85, DF 1.18, F = 0.0529, NSD), leader orientation (SLX = 8.45, TLX = 6.76, DF 1.18, F = 0.642, NSD) or the interaction between the two (DF 1.18, F = 0.592, NSD).

Neutral affective cognitive tendencies for each cluster item were examined using a three-way analysis of variance. The three variables were leader sex, leader orientation, and respondent sex.

Analyses of individual neutral affective tendencies toward the group produced no significant differences for leader sex (FLX = 9.09, MLX = 4.82, DF 1.80, F = 0.408, NSD), leader orientation (SLX = 4.82, TLX = 9.05, DF 1.80, F = 0.408, NSD), or respondent sex (F̅X = 4.89, M̅X = 9.00, DF 1.80, F = 0.0715, NSD). There was a marginally significant interaction between leader orientation and respondent sex (DF 1.80, F = 3.86, p < .06). Newman-Keuls probing of the F indicated that task oriented males tended toward more neutral group thoughts than all other conditions (see Table 11). There were no other significant interactions.

Individual neutral affective tendencies toward the leader showed no significant differences for leader sex (FLX̅ = 3.60, MLX̅ = 3.66, DF 1.18, F = 0.108, NSD), leader orientation (SLX̅ = 3.66, TLX̅ = 3.60, DF 1.18, F = 0.108, NSD), or respondents' sex (F̅X = 3.71, M̅X = 3.96, DF 1.80, F = 0.661, NSD). There were no significant interactions.

The neutral affective tendencies of individuals for the task indicated no significant differences for leader sex (FLX̅ = 7.46, MLX̅ = 7.57, DF 1.80, F = 0.08, NSD), leader orientation (SLX̅ = 7.32, TLX̅ =
**TABLE 11**

INDIVIDUAL AFFECTIVE NEUTRAL TENDENCY TOWARD THE GROUP BY LEADER CONDITION AND RESPONDENT SEX

P<.01 UNLESS OTHERWISE NOTED

<table>
<thead>
<tr>
<th>SOCIAL-ORIENTED MALES</th>
<th>TASK-ORIENTED FEMALES</th>
<th>SOCIAL-ORIENTED FEMALES</th>
<th>TASK-ORIENTED MALES</th>
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<td>5.45</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.

1. Task-oriented males differ from social-oriented females at .05.
7.71, DF 1.80, F = 1.16, NSD) or the respondents' sex (F̅X = 7.65, M̅X = 7.43, DF 1.80, F = 0.913, NSD). There was a significant interaction between leader sex and orientation (DF 1.80, F = 5.23, p < .09).

Newman-Keuls analysis shows that female task oriented subjects had more neutral affective tendencies to think about the task than all other conditions. Conversely, female social oriented subjects had the least neutral affective tendencies than all other conditions (see Table 12). There were no other significant interactions.

Individual neutral affective tendencies for the overall cluster in general did not differ as a function of leader sex (FLX = 11.71, MLX = 11.31, DF 1.80, F = 0.33, NSD), leader orientation (SLX = 11.26, TLX = 11.77, DF 1.80, F = 0.912, NSD), or the respondents' sex (F̅X = 11.28, M̅X = 11.88, DF 1.80, F = 0.447, NSD). There was a significant interaction for leader sex and orientation (DF 1.80, F = 8.27, p < .009). Newman-Keuls' probing of the F revealed that female task oriented subjects had a greater rate of overall neutral affective tendencies than all other conditions (see Table 13). There were no other interactions.

Group neutral affective tendencies toward the task did not differ as a function of leader sex (FLX = 7.46, MLX = 7.4, DF 1.18, F = 0.002, NSD), leader orientation (SLX = 6.8, TLX = 8.06, DF 1.18, F = 0.767, NSD) or the interaction between the two (DF 1.18, F = 2.90, NSD).

Analyses of group neutral affective tendencies toward the group showed no significant differences for leader sex (FLX = 9.5, MLX = 8.31, DF 1.18, F = 0.631, NSD), leader orientation (SLX = 8.41, TLX =
### TABLE 12

**INDIVIDUAL AFFECTIVE NEUTRAL TENDENCY TOWARD THE TASK BY LEADER SEX AND ORIENTATION**

*P < .01 UNLESS OTHERWISE NOTED*

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCIAL-ORIENTED</td>
<td>6.85</td>
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<td>8.08</td>
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<td>B</td>
<td>C</td>
<td>D</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.

1. Female task-oriented differs from male social-oriented at .05.

### TABLE 13

**INDIVIDUAL OVERALL NEUTRAL AFFECTIVE THOUGHTS BY LEADER SEX AND ORIENTATION**

*P < .01*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASK-ORIENTED</td>
<td>10.55</td>
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<td>C</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
9.40, DF 1,18, F = 0.436, NSD), or the interaction between the two (DF 1,18, F = 0.0001, NSD).

Neutral affective tendencies by the group while thinking about the leader revealed no significant differences for leader sex (FLX = 2.79, MLX = 2.75, DF 1,18, F = 0.0000, NSD). However, significant differences were obtained for leader orientation (SLX = 2.75, TLX = 2.83, DF 1,18, F = 4.60, p <.09) and the interaction (DF 1,18, F = 9.97, p <.09). Newman-Keuls analysis showed that female task oriented and male social oriented groups tended to have a higher tendency to think along neutral lines about the leader. It should be stressed that the numbers of reported leader thoughts were so extremely low that reliable or valid conclusions concerning cognitive affective tendencies toward the leader cannot be drawn. Because of this, these results must be discounted.

Overall neutral affective tendencies of the group toward the cluster in general indicated no significant differences for leader sex (FLX = 18.23, MLX = 15.26, DF 1,18, F = 1.004, NSD) or orientation (SLX = 16.06, TLX = 17.43, DF 1,18, F = 0.213, NSD). A significant interaction was found (DF 1,18, F = 6.41, p <.05). Newman-Keuls probing of the F showed that female task oriented groups tended towards a more overall neutral affect with regards to the general cluster (see Table 14).

A 2 x 2 x 3 analysis of variance with repeated measures on cluster items was conducted on individual favorable affective cognitive tendencies to think about certain cluster items over others. Because
### TABLE 14

**GROUP OVERALL NEUTRAL AFFECTIVE THOUGHTS BY LEADER SEX AND ORIENTATION**

P<.01 UNLESS OTHERWISE NOTED

<table>
<thead>
<tr>
<th></th>
<th>MALE TASK-ORIENTED</th>
<th>FEMALE SOCIAL-ORIENTED</th>
<th>MALE SOCIAL-ORIENTED</th>
<th>FEMALE TASK-ORIENTED</th>
</tr>
</thead>
<tbody>
<tr>
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<td>12.2</td>
<td>13.8</td>
<td>18.33</td>
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</tr>
<tr>
<td></td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.

1. Male social-oriented differed from female social-oriented at .05.
2. Female task-oriented differed from male social-oriented at .05.
of unequal X per cell, the data had to be examined first by leader sex, respondent sex, and type of cluster cognition and secondly, by leader orientation, respondent sex, and type of cluster cognition. No interaction between leader sex and orientation could be examined.

Individual favorable affective tendencies to think about certain cluster items over others revealed no significant difference for leader sex (FLX = 5.23, MLX = 5.18, DF = 1.87, F = 0.126, NSD) or respondents' sex (FXT = 5.22, MXT = 5.18, DF 1.87, F = 0.0645, NSD). There was a significant difference in type of cluster item (GXT = 5.5, LXT = 5.10, TXT = 5.02, DF 2.168, F = 3.78, p <.05). Newman-Keuls analysis indicated that individuals had higher favorable affective tendencies to think about the group over both the leader and task (see Table 15). There were no significant interactions.

Individuals overall favorable affective tendencies to think about certain cluster items over others was examined by leader orientation. The results showed no significant differences for leader orientation (FLX = 5.29, MLX = 5.12, DF 1.87, F = 1.37, NSD) or respondents' sex (FXT = 5.22, MXT = 5.18, DF 1.87, F = 0.065, NSD). There was a significant difference in type of cognition (GXT = 5.5, LXT = 5.10, TXT = 5.02, DF 2.168, F = 3.78, p <.05). Since the cluster item scores were the same as in the leader sex examination, Newman-Keuls analysis showed that individuals were more favorable towards group than both leader or task. There were no significant interactions.

Analysis of variance with repeated measures on cluster items was performed on group overall favorable affective cognitive tendencies to
TABLE 15
INDIVIDUAL OVERALL FAVORABLE-NEGATIVE AFFECTIVE TENDENCIES TOWARD CERTAIN CLUSTER ITEMS BY LEADER SEX OR ORIENTATION
P<.05

<table>
<thead>
<tr>
<th>TASK</th>
<th>LEADER</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
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<tr>
<td>B</td>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
think about certain cluster items over others. Because of unequal N per cell, no interaction between leader sex and orientation could be examined.

An examination of group overall favorable affective tendencies to think about certain cluster items over others was conducted on leader sex and type of cluster item. The results produced no significant difference for leader sex (FLX = 5.87, MLX = 6, DF 1,20, F = 0.954, NSD). There was a significant difference for type of cognition (GX = 7.27, LX = 5.40, TX = 5.13, DF 2,40, F = 4.88, p < .05). Newman-Keuls probing of the F indicated that groups tended to have more favorable affective tendencies for the group than the leader of the task (see Table 16). The interaction was not significant (DF 2,40, F = 0.092, NSD).

Group overall favorable affective tendencies to think about certain cluster items more than others showed no significant difference for leader orientation (SLX = 6.21, TLX = 5.66, DF 1,20, F = 0.954, NSD). There was a significant difference in type of cognition (GX = 7.27, LX = 5.40, TX = 5.13, DF 2,40, F = 5.23, p < .01). Newman-Keuls probing of the F indicated that groups had a higher tendency to have favorable affective group thoughts than either leader or task thoughts (see Table 16). There was no significant interaction (DF 2.40, F = 1.51, NSD).

Analysis of variance of individuals' overall neutral affective tendencies to think about certain cluster items more than others was conducted.
<table>
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<tr>
<th>TASK</th>
<th>LEADER</th>
<th>GROUP</th>
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</thead>
<tbody>
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<td>7.27</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
Individuals overall neutral affective tendencies to think about certain cluster items more than others revealed no significant differences for leader sex ($FL\bar{X} = 7.38$, $ML\bar{X} = 7.34$, DF 1,87, $F = 0.051$, NSD) or respondent sex ($F\bar{X} = 7.41$, $M\bar{X} = 7.31$, DF 1,87, $F = 0.282$, NSD). There was a significant difference for type of cognition ($G\bar{X} = 6.92$, $L\bar{X} = 7.61$, $T\bar{X} = 7.55$, DF = 2,168, $F = 6.24$, $p < .005$). Newman-Keuls analysis indicated that individuals had more neutral affective tendencies toward the leader and the task than they did for the group (see Table 7). There were no significant interactions.

Individual overall neutral affective tendencies to think about certain cluster items over others via leader orientation showed no significant differences for leader orientation ($SL\bar{X} = 7.28$, $TL\bar{X} = 7.47$, DF 1,87, $F = 1.03$, NSD) or respondents' sex ($F\bar{X} = 7.41$, $M\bar{X} = 7.34$, DF 1,87, $F = 0.152$, NSD). There was a significant difference for type of cognition ($G\bar{X} = 6.92$, $L\bar{X} = 7.65$, $T\bar{X} = 7.55$, DF 2,168, $F = 6.78$, $p < .005$). Newman-Keuls probing of the F revealed that individuals had more neutral affective tendencies toward the leader and the task than they did for the group (see Table 17). There were no significant interactions.

Analyses of variance with repeated measures on cluster items was conducted on group perceptions of overall neutral affective tendencies to think about certain cluster items over others.

Group overall neutral affective tendencies to think about certain cluster items via leader sex yielded no significant difference for leader sex ($FL\bar{X} = 11$, $ML\bar{X} = 10.48$, DF 1,20, $F = 0.531$, NSD). There was
TABLE 17

INDIVIDUAL NEUTRAL AFFECTIVE TENDENCIES TOWARD 
OVERALL CLUSTER ITEMS BY LEADER SEX OR ORIENTATION

P < .01

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TASK</th>
<th>LEADER</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.92</td>
<td>7.55</td>
<td>7.61</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
a significant difference in type of cognition (GX = 8.90, LX = 11.77, 
TX = 11.54, DF 2,40, F = 6.35, p <.005). Newman-Keuls analysis indicated that groups had higher neutral affective tendencies towards the leader and task than the group (see Table 17). There were no interactions (DF 2,40, F = 0.271, NSD).

Group overall neutral affective tendencies to think about certain cluster items more than others showed no significant differences in leader orientation (SLX = 10.33, TLX = 11.15, DF 1,20, F = 1.39, NSD). There was a significant difference in type of cognition (GX = 8.90, LX = 11.77, TX = 11.54, DF 2,40, F = 6.34, p <.005). Newman-Keuls probing of the F found that groups had a higher neutral affective tendencies for leader and task thoughts (see Table 18). There were no significant interactions (DF 2,40, F = 0.253, NSD).

Pearson Product Moment correlations were run to further examine any relationship among the three cluster items (Group, Leader, Task) and individual favorable or neutral affective tendencies toward them. Out of 18 possibilities, only one approached significance. There was a marginally significant positive correlation (r = .25, p <.10) between neutral tendencies for leader and task thoughts by females. Due to the fact that no other correlation in this area even approached significance and that significance of this correlation is marginal at best, the author feels it was probably randomly generated.

Pearson Product Moment were also run for relationships among the three cluster items and group favorable or neutral affective tendencies toward them. No significant correlations were found in any condition.
TABLE 18

GROUP'S OVERALL NEUTRAL AFFECTIVE TENDENCIES TOWARD CERTAIN CLUSTER ITEMS BY LEADER SEX OR ORIENTATION

p<.01

<table>
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<tr>
<th>GROUP</th>
<th>TASK</th>
<th>LEADER</th>
</tr>
</thead>
<tbody>
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<td>A</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.
A three way analysis of variance was conducted to examine individuals' task-social cognitive tendencies. The three variables were leader sex, leader orientation, and subjects' sex. The results showed no significant differences for leader sex ($FL\bar{x} = 7.42, ML\bar{x} = 7.08$, DF $1,80, F = 0.337, NSD$), leader orientation ($SL\bar{x} = 7.14, TL\bar{x} = 7.35$, DF $1,80, F = 0.137, NSD$), or respondents' sex ($F\bar{x} = 7.29, M\bar{x} = 7.21$, DF $1,80, F = 0.0261, NSD$). There were no significant interactions.

Group task-social cognitive tendencies indicated no significant difference for leader sex ($FL\bar{x} = 8.52, ML\bar{x} = 7.73$, DF $1,18, F = 0.178, NSD$), leader orientation ($SL\bar{x} = 8.13, TL\bar{x} = 8.12$, DF $1,18, F = 0.00004, NSD$) or the interaction (DF $1,80, F = 0.326, NSD$).

Because of the nature of a task oriented cognition, no affective analysis was conducted on task (central) tendencies because it involves their careful consideration of the rational and efficacious solving of the task at hand and they should be free of any affect or at least affect that is meaningful to this study. To have a negative or positive task-oriented thought only means the individual is examining the problem solving options at hand and is accepting or rejecting them as they see fit. It is expected that under scrutiny of a task via the central route that all types of negative, positive, and neutral thoughts will occur, but their influence under conditions of centralized processing is of little relation to the popular and accepted definition of affect. While one can like an option for
solving a problem, and also like an individual because he is friendly, these feelings evolve from entirely different cognitive routes and levels of integration and have no real similarity in construct (Petty & Cacioppo, 1981, 1986).

On the other hand, social-oriented (peripheral) tendencies need to be examined in depth, since they are actually the route of predominant affective behavior (Petty & Cacioppo, 1981, 1986). Because of this a three-way analysis of variance was performed on individual favorable affective tendencies on social-oriented peripheral thoughts. The results revealed no significant difference for leader sex ($FL\bar{X} = 3.11$, $ML\bar{X} = 3.14$, DF 1.80, $F = .010$, NSD) or respondent sex ($F\bar{X} = 3.13$, $M\bar{X} = 3.12$, DF 1.80, $F = .003$, NSD). There was a significant difference in leader condition ($SL\bar{X} = 3.42$, $TL\bar{X} = 2.84$, DF 1.80, $F = 3.98$, $p < .05$). Subjects under social-oriented leaders had a higher tendency for favorable social-oriented thoughts than did task-oriented subjects. There was a significant interaction between leader sex and subject sex (DF 1.80, $F = 3.98$, $p < .05$). Newman-Kuels analysis indicated that males under female leadership and females under male leadership had higher tendencies of favorable social-oriented thoughts than did the same-sex conditions (see Table 19). The interaction between leader orientation and subject sex approached significance (DF 1.80, $F = 2.87$, $p < .10$). Newman-Kuels probing of the F indicated that task-oriented males had the least tendency toward favorable social-oriented thoughts than all other conditions. Conversely, social-oriented males had the
<table>
<thead>
<tr>
<th></th>
<th>Female Leader</th>
<th>Male Leader</th>
<th>Female Leader</th>
<th>Male Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
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<td>2.79</td>
<td>3.45</td>
<td>3.49</td>
</tr>
<tr>
<td>Males</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
highest tendency toward favorable social-oriented thoughts (see Table 20). There were no other significant interactions.

Group tendencies toward favorable social-oriented (peripheral) thoughts yielded no significant differences for leader sex ($FL\bar{X} = 12.46$, $ML\bar{X} = 12.58$, DF 1.18, $F = 0.007$, NSD). There was marginal significance for leader orientation ($SL\bar{X} = 13.68$, $TL\bar{X} = 11.36$, DF 1.18, $F = 3.06$, $P < .10$). Social-oriented subjects tended to have more favorable social-oriented thoughts than task-oriented subjects. There was no significant interaction (DF 1.18, $F = 0.13$, NSD).

Individuals neutral affective tendencies for social-oriented thoughts was examined with a three-way analysis of variance. The results indicate no significant relationship for leader sex ($FL\bar{X} = 5.16$, $ML\bar{X} = 4.96$, DF 1.80, $F = 0.356$, NSD), leader orientation ($SL\bar{X} = 4.93$, $TL\bar{X} = 5.19$, DF 1.80, $F = 0.552$, NSD), or respondents' sex ($FX = 5.06$, $M\bar{X} = 5.06$, DF 1.80, $F = 0.0004$, NSD). There was a significant interaction between leader orientation and respondents' sex (DF 1.80, $F = 9.14$, $p < .005$). Newman-Kuels probing of the $F$ indicates that task-oriented males and social-oriented females had higher tendencies toward neutral affective thoughts than did social-oriented males or task-oriented females (see Table 21). There were no other significant interactions.

An examination of group neutral affect tendencies for social-oriented (peripheral) thoughts found no significant differences for leader sex ($FL\bar{X} = 20.67$, $ML\bar{X} = 19.85$, DF 1.18, $F = 0.426$, NSD), leader
TABLE 20

INDIVIDUAL FAVORABLE-NEGATIVE AFFECTIVE SOCIAL-ORIENTED (PERIPHERAL) TENDENCIES BY LEADER ORIENTATION AND RESPONDENT SEX

\[ P < .01 \]

<table>
<thead>
<tr>
<th>Task-Oriented</th>
<th>Task-Oriented</th>
<th>Social-Oriented</th>
<th>Social-Oriented</th>
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<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>2.58</td>
<td>3.09</td>
<td>3.18</td>
<td>3.66</td>
</tr>
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<td>C</td>
<td>B</td>
<td>B</td>
<td>A</td>
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</tbody>
</table>

Means with common subscript do not differ from each other.

TABLE 21

INDIVIDUAL NEUTRAL AFFECTIVE SOCIAL-ORIENTED (PERIPHERAL) TENDENCIES BY LEADER ORIENTATION AND RESPONDENT SEX

\[ P < .01 \]

<table>
<thead>
<tr>
<th>Social-Oriented</th>
<th>Task-Oriented</th>
<th>Social-Oriented</th>
<th>Task-Oriented</th>
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<td>Females</td>
</tr>
<tr>
<td>4.42</td>
<td>4.67</td>
<td>5.45</td>
<td>5.71</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
orientation \( (SL\bar{X} = 19.75, TL\bar{X} = 20.77, DF = 1.18, F = 0.66, NSD) \), or the interaction between the two \( (DF = 1.18, F = 0.156, NSD) \).

In an effort to find some type of relationship between treatment conditions and task-oriented (central) or social-oriented (peripheral), it was decided to examine raw task-oriented and social-oriented thoughts. As a general rule, when one examines thought lists or information processing, one should break the thoughts into specific ratios or indices, which in this study are labeled as tendencies. This controls for such traits as high or low cognitive rates, which vary from individual to individual (see Petty & Cacioppo, 1986, for further discussion on the need to cognate). Still, several studies have based their findings on raw thought levels (see Petty & Cacioppo for further discussion). Based on this, raw central and peripheral thoughts were examined for both groups and individuals.

Three way analysis of variance for individual raw central thoughts produced no significant differences for leader sex \( (FL\bar{X} = 2.09, ML\bar{X} = 2.05, DF = 1.80, F = 0.008, NSD) \), leader orientation \( (SL\bar{X} = 2.15, TL\bar{X} = 1.99, DF = 1.80, F = 0.16, NSD) \), or respondents' sex \( (F\bar{X} = 2.35, M\bar{X} = 1.79, DF = 1.80, F = 1.84, NSD) \). There were no significant interactions.

An analysis of group raw central thoughts produced no significant differences for leader sex \( (FL\bar{X} = 8.44, ML\bar{X} = 8.23, DF = 1.18, F = 0.0099, NSD) \), leader orientation \( (SL\bar{X} = 8.63, TL\bar{X} = 7.98, DF = 1.18, F = 0.185, NSD) \), or the interaction between the two \( (DF = 1.18, F = 1.68, NSD) \).
A three way analysis of variance for individuals' raw social-oriented (peripheral) thoughts was conducted. The results indicated no significant differences for leader sex ($FLX = 2.69$, $MLX = 2.88$, $DF 1,80$, $F = 0.249$, NSD), leader orientation ($SLX = 2.94$, $TLX = 2.62$, $DF 1,80$, $F = 0.712$, NSD), or respondents' sex ($FX = 2.99$, $MX = 2.58$, $DF 1,80$, $F = 1.21$, NSD). There was a marginally significant interaction for leader orientation and respondent sex ($DF 1,80$, $F = 2.77$, $p < .10$). Newman-Keuls probing of the F indicated that task oriented males have few raw social oriented thoughts in relation to all other conditions (see Table 22). There were no other significant interactions.

Group raw social-oriented (peripheral) thoughts were examined with two-way ANOVAs. The results show no significant difference for leader sex ($FLX = 10.52$, $MLX = 11.52$, $DF 1,18$, $F = 0.197$, NSD), leader orientation ($SLX = 11.79$, $TLX = 10.33$, $DF 1,18$, $F = 0.489$, NSD) or the interaction between the two ($DF 1,18$, $F = 0.00007$, NSD).

To investigate the cognitive patterns of individuals working at the task alone or in a group, special tendency factors had to be constructed. The individuals in the control group would not be socializing at all so only task oriented (Central) thoughts were scored on their thought lists. In order to compare task oriented cognitions of the control and treatment groups, indices based on total thought/task oriented ratios were constructed and then analyzed using one way analysis of variance. Results indicated significant differences existed among all five groups ($DF 4,95$, $F = 13.11$, $p < .001$). Newman-Keuls analysis indicates that the control group had
TABLE 22

INDIVIDUAL LEVELS OF RAW SOCIAL-ORIENTED (PERIPHERAL) THOUGHTS BY LEADER ORIENTATION AND RESPONDENT SEX

\( P < .01 \)

<table>
<thead>
<tr>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
<th>TASK-ORIENTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALES</td>
<td>FEMALES</td>
<td>MALES</td>
<td>FEMALES</td>
</tr>
<tr>
<td>2.09</td>
<td>2.84</td>
<td>3.05</td>
<td>1.06</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
more task oriented tendencies than all other conditions (see Table 23). In addition, female task oriented females had higher task oriented conditions than female social oriented females (see Table 24). Finally, males followed similar patterns; Newman-Keuls analysis showed that the control group had higher tendencies of task oriented thoughts than did all other conditions (see Table 25).

Correlated t-tests were run on individuals' differences in raw social oriented (peripheral) and raw task oriented (central) cognitions. There were significant differences for all individuals (DF 87, t = 3.46, p < .005), males (DF 43, t = 2.10, p < .025) and marginal significance for females (DF 43, t = 1.52, p < .08). In all cases there was a higher rate of raw social oriented (peripheral) thoughts than task oriented (central). No Pearson Product Moment value even approached significance in any other condition.

A correlated t-test was run on all groups to test for a difference in raw social oriented (peripheral) and raw task oriented (central) cognitions. The difference was significant (DF 21, t = 2.32, p < .025). There was a higher rate of raw social oriented thoughts than raw task oriented thoughts. The Pearson Product Moment correlation was not significant.

Pearson correlations were run to compare task performance and task social tendencies, raw task oriented thoughts, raw peripheral, group cluster and task cluster tendencies. There were no significant correlations for task performance and task social tendencies, raw social (peripheral) thoughts, and group cluster tendencies. There were
### TABLE 23

**TASK-ORIENTED (CENTRAL) COGNITIONS VS. TOTAL THOUGHT INDEX**

<table>
<thead>
<tr>
<th></th>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
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<tr>
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<td><strong>MALE</strong></td>
<td>9.58</td>
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<td></td>
</tr>
<tr>
<td><strong>MALE</strong></td>
<td>10.34</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td><strong>FEMALE</strong></td>
<td>10.98</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td><strong>CONTROL</strong></td>
<td>15.47</td>
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<td></td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.

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### TABLE 24

**TASK-ORIENTED (CENTRAL) COGNITIONS VS. TOTAL THOUGHTS INDEX FOR FEMALES**

<table>
<thead>
<tr>
<th></th>
<th>TASK-ORIENTED</th>
<th>SOCIAL-ORIENTED</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>FEMALE</strong></td>
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<tr>
<td><strong>FEMALE</strong></td>
<td>11.35</td>
<td>C</td>
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</tr>
<tr>
<td><strong>CONTROL</strong></td>
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</table>

Means with common subscript do not differ from each other.
<table>
<thead>
<tr>
<th>Gender</th>
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<th>Contents</th>
<th>Social-Oriented</th>
<th>Contents</th>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Male</td>
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<td>10.71</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10.71</td>
<td>B</td>
<td>15.49</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>15.49</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Means with common subscript do not differ from each other.
significant positive correlations for task performance and raw (central) thoughts (DF 21, \( r = .453, p < .05 \)), and task cluster tendencies (DF 21, \( r = .438, p < .05 \)).

Median split analyses was conducted on task performance and task social tendencies, raw task (central) thoughts, raw social (peripheral) thoughts, group cluster tendencies, and task cluster tendencies. There were no significant differences in task performance for task-social tendencies (DF 1,20, \( F = 0.59, \text{NSD} \)), raw social (DF 1,20, \( F = 0.439, \text{NSD} \)) or group cluster tendencies (DF 1,20, \( F = 0.439, \text{NSD} \)). There was marginal significance for task cluster tendencies and task performance (DF 1,20, \( F = 3.79, p < .07 \)).
DISCUSSION

The present study examined the cognitive functions of individuals and groups under two different types of leadership orientation: task and social. While the results were not in compliance with predicted outcomes, there were still many important findings.

Task performance was only marginally affected by leadership condition with the female socially-oriented condition performing at a less effective level than all other treatment conditions. When compared against the performance of individuals (control), both the female-task oriented and male-social oriented groups performed significantly better. The male-task oriented group performed more effectively at a marginally significant level than did the individual members (control). The female-social group did not differ significantly with the control individuals' performances. The results indicate that groups performed better than individuals on the Taylor campus survival kit.

All cognitions and cognitive tendencies were examined from individual and group perspectives. For total thoughts it was found that socially oriented individuals generated more total thoughts than task oriented individuals. Females tended to have more total thoughts than males, though significance was marginal. There were no significant differences between treatment conditions and favorable cognitive tendencies. However, individuals in the female-task oriented
condition and male-social oriented condition had significantly more overall neutral cognitive tendencies, with the female-task oriented condition being significantly different than all other conditions.

There were no significant differences between treatment group perceptions for total thoughts or favorable cognitive tendencies. But for overall neutral tendencies, group perceptions reflected those of individuals with both the female-task oriented and male-socially oriented conditions tending along more overall neutral cognitive tracts. Again, the female-task oriented condition was significantly different from all other conditions.

The study examined both individual and group tendencies to think about certain cluster items. The cluster consisted of thoughts about the group, thoughts about the leader, and thoughts about the task.

Data on individual tendencies to think about the group produced a significant interaction with leader orientation and respondents' sex. Task-oriented females thought more about the group while socially-oriented females thought least about the group. Task-oriented and social-oriented males thought more about the group than social-oriented females and differed significantly between themselves with the social condition having more group cognitive tendencies.

The findings for individual tendencies to think about the task revealed a crucial finding. Again, there was a significant interaction with leader orientation and respondent sex. The level of tendency to think about the task via treatment condition was the reverse of the levels of the group cognitive tendency. In this case, social-oriented
females thought most about the task and task-oriented females thought the least. Task-oriented and social-oriented males were second and third, respectively, in levels of task cognitive tendencies and differed significantly from each other. Only task-oriented females and social-oriented males did not significantly differ.

There were no significant differences among any conditions for leader cognitive tendencies other than a marginal finding that males thought more about the leader than did females.

This group of findings tends to support the belief that individuals "only have a limiting amount of information processing time and capacity" (Miller, Brickman, & Bolon, 1975, p. 623), which has also been expressed by McGuire (1969, "Lazy Organisms") and Taylor (1981, "Cognitive Misers"). Even under conditions of high motivation and ability individuals must make decisions as to what they will think about. This research indicates that individuals in certain treatment conditions chose between concentration either on the group or the task while maintaining an even level of cognitive tendency towards the leader.

Overall tendencies to think about certain cluster items over others revealed another significant finding. Regardless of leader sex or orientation, individuals thought about the group and the task significantly more than the leader. This means that the leader did not play a great role in individual group members' cognitions. This could account for the marginal to nonsignificant differences for task performance between leader conditions. It also could hold implications
for a reduction in concentration on the role of leadership in small
group behavior, since it is obvious in this study that individuals gave
the leader very little cognitive time.

However, several of these findings diminish in significance when
examined from a group perspective. There were no significant
differences for any of the individual cluster items (group, task or
leader cognitive tendencies) and treatment conditions from a group
rather than individual perspective. The lone exception is the finding
that groups, regardless of condition, think about the group or the task
significantly more than the leader.

Correlation analysis of cluster cognitions further clarified the
relationship. There was no correlational relationship between group
and leader tendencies for all individuals or by individual's sex.
There was a very strong inverse correlation between group and task
tendencies and it was present for all individuals and by individual's
sex. This adds support to Miller et al., McGuire, and Taylor's
contentions. An additional mild inverse correlation was found between
leader and task tendencies which held for perceptions of all
individuals, perceptions of just females, but not perceptions of just
males. The addition of the leader-task inverse relationship to the
body of findings offers an interesting explanation. Task tendencies
are thoughts about the task, but intuitively leader and group
tendencies could be argued to be social tendencies since they
predominantly deal with thoughts about other members of the group and
the group overall. Certainly both cluster tendencies, leader and
group, can and do follow a central (task-relevant) route of processing. Because of this some leader and group thoughts are actually task-relevant thoughts (just as some task thoughts are social-relevant thoughts). Still these cluster items (as identified by subjects) predominantly fit in with their subject's initial definitions of them. With this in mind one can see the clear significant inverse relationship between social (group and leader) and task cognitions (task) as defined by the subjects. The individuals chose either to think along mainly social or task routes and could not for the most part do both in equal amounts. Correlational analyses of group perceptions strengthens this argument. Unlike individual perceptions, there was a strong positive correlation between group and leader cognitive tendencies for group perceptions. Additionally, there was a very strong inverse relationship between group and task tendencies and a strong inverse correlation for leader and task cognitions. It should be emphasized that in the majority of cases these correlations were very strong indeed, sometimes accounting for 69% of the curve.

The examination of affective cognitive tendencies toward cluster items of individual group members showed that social conditions had more favorable group tendencies than task-oriented conditions. Task-oriented males tended to be more neutral toward the group than all other conditions while social-oriented males and task-oriented females were the least neutral towards the group. However, all of these findings were only marginally significant.
For favorable affective leader tendencies there was a marginally significant interaction for leader sex and respondent sex. Not surprisingly, females in male-leader groups had most favorable leader tendencies. While females in female leader groups and males in female leader groups differed from males in male leader groups and females in male leader groups. They did not differ between each other.

Two important significant interactions were reported for individual affective tendencies toward the task. The first was an interaction between leader sex and orientation. Female task-oriented individuals had the most favorable task tendencies and female social-oriented individuals had the least favorable task tendencies. Male social-oriented and male task-oriented individuals had the second and third levels of favorable tendencies toward the task, respectively. All conditions differed significantly. The second finding was a triple interaction between leader sex, orientation, and respondent sex. Regardless of condition, female leader-males had the least favorable tendencies toward the task and were significantly different from all other conditions. Female social-oriented females had the most favorable task tendencies.

There was a significant difference in conditions for overall neutral cluster tendencies. Female task-oriented individuals tended to be more neutral than all other conditions while female social-oriented and male task-oriented individuals were the least neutral toward the cluster.
An examination of individual overall tendencies for favorable thoughts about cluster items over others revealed that, regardless of leader sex or condition, individuals tended to think more favorably about the group than either the leader or the task. Favorable tendencies for the leader and the task did not vary. Not surprisingly, individual overall tendencies for neutral thoughts about certain cluster items over others showed that, regardless of leader sex or condition, individuals thought about the leader and the task in more neutral terms than they did about the group. The leader and the task neutral tendencies did not vary. These findings lend further support to the observation that individuals thinking about social (i.e., group) and task (i.e., task) factors follow different cognitive tracts. It is true that this study has already argued that leader cluster items are predominantly social-oriented. Thus, they should have little relationship to task thoughts. Why is this not the case here? The most plausible explanation lies in the fact that there was so little thinking about the leader that no clear affective cognitive direction (other than neutral) could be derived from the data. About 40% of the subjects did not even record a leader based cognition; this is in comparison to 7% for group based and 10% for task based cognitions. While small percentages of zero level cognitions can be expected in any thought listing study, instances where large numbers of subjects fail to report any thoughts about a certain dependent measure can bias the indices in the direction of neutrality. One way to combat this artifact is to analyze the raw dependent measure for each condition.
Three way analysis of variance for repeated measures indicated that regardless of leader (DF 2,168, F = 24.453, p <.001) sex or orientation (DF 2,168, F = 27.34, p <.001) individuals had significantly less raw neutral leader thoughts than group or task cognitions. Newman-Kuels probing of the F further supported this finding. Now that it has been clarified that the neutral leader affective tendencies were actually based on a lack of overall leader cognitions, it should be clear that not only do group and task cluster cognitions have an inverse relationship in overall cognitive tendencies, their affective characteristics lie in different dimensions. An affective direction perhaps cannot be determined for the leader since so little leader based thinking was reported. Because the group cluster is predominantly social-oriented, it is not suprising that group cluster cognitions would either be significantly more favorable or negative than the other cluster items since it is reasonable to assume that social-oriented cognitions will be examined with more concern for affective valence. Conversely, it is also not surprising that task cluster cognitions are examined along a predominantly neutral affective tract since thoughtful and logical (and probably central) thinking about the task should involve solving a problem rather than dealing with the stimulus from a favorable-negative affective standpoint. Almost all the significant findings disappear for affective cluster tendencies when the data are examined from a group perspective. There were no significant differences in group favorable tendencies for any of the cluster items. There was a significant interaction for leader
sex and orientation and neutral affective tendencies toward the leader. Female task-oriented and male social-oriented conditions were more neutral than female social-oriented and male task-oriented conditions. However, the aforementioned extremely low reporting of leader cognitions coupled with a zero F value for one effect cast doubt on the reliability of this finding. For overall neutral affective tendencies towards the cluster there was a significant interaction for leader sex and orientation. Female task-oriented groups were the most neutral followed by male social-oriented groups. Male task-oriented and female social-oriented were the least neutral but did not differ significantly from each other.

Overall group favorable affective tendencies toward certain cluster items over others showed that, regardless of leader sex or orientation, groups had more favorable tendencies toward the group than either the leader or the task. The leader and task tendencies did not vary.

Analyses of overall group neutral affective tendencies toward certain cluster items over others indicated that, regardless of leader sex or orientation, groups had more neutral tendencies for leader and task cognitions that group cognitions. Leader and task cognitions did not vary. To combat low reports of leader based cognitions, an analysis of group raw neutral cluster cognitions was conducted. The results were similar to those found for individuals. Regardless of leader sex (DF 2,40, F = 23.95, p <.001) or orientation (DF 2,40, F = 23.22, p < .001), the leader cluster had significantly fewer raw neutral
affective cognitions. This supports the dimensional differences between group and task cluster cognitions at the level of group perceptions. Correlational analyses for both group and individual favorable affective tendencies turned up no significant correlations between any cluster items for either individual or group perceptions. Additional correlational analyses for both group and individual neutral affective tendencies produced no significant correlation between any cluster items for group perceptions and one marginally mild correlation for individual perceptions. There was a mild correlation between leader and task neutral tendencies for females. However, based on the fact that 23 other affective correlational analyses did not approach significance and the significance of this finding was very marginal (p < .10), it is more than likely a case of chance.

Interpretation of the affective cognitive tendencies in this study are cloudy at best and can really only be examined from individual perceptions since group tendencies were largely non-significant.

Affective tendencies toward the group seem to be affected by the orientation of the leader. Social conditions provided marginally more favorable thoughts and this would be consistent with implicit predictions since it is evident in this study that group cognitions are predominantly social-oriented.

Favorable affective tendencies for the leader seem to be based on differences in leader-respondent sex. Respondents with an opposite sex leader generated more favorable leader tendencies than respondents of a same sex leader.
However, while opposite sex respondents had more favorable leader thoughts, they did not necessarily feel the same way on other cluster items. Female-led males had less favorable tendencies toward the task than all other conditions while females from male task- and female social-oriented conditions had the most favorable task tendencies. Additional favorable affective task tendencies cloud the interpretation. Female task-oriented subjects had higher favorable task tendencies than all others but their social oriented counterparts had the least, followed by the male task-oriented condition. It is not clear where the affective tendencies of subjects fit into the overall small group dynamic in this study since in several instances task-oriented subjects had more favorable affective tendencies than social-oriented individuals, going against intuitive design. Nor is it very certain as to what legitimate role an affective task tendency plays in overall group performance, other than that task thoughts should be predominantly neutral since they characteristically should involve thoughtful consideration of the task at hand.

It is the overall affective tendencies that offer the best insight into the relationship between information processing and small group affective behavior. Group (social) thoughts were favorable while task thoughts remained neutral, leader thoughts, being so low, can be viewed as somewhat inconsequential from an affective standpoint. The fact that no correlation exists between group and task thoughts along an affective tract further indicates that these thoughts are in different
information processing routes and have no affective relationship whatsoever.

The most disappointing findings are those regarding the task-oriented (central) and social-oriented (peripheral) routes. There were no differences for either individuals or groups for task/social route tendencies. The data were further examined by raw thought levels. For individuals, there was a significant finding for leader condition and respondent sex for raw social-oriented (peripheral) thoughts. Task-oriented males had the most socially-oriented thoughts and socially-oriented females had the second highest level. Both socially-oriented males and task-oriented females had the least. This is at best very marginal support for H2. H1 is rejected because there were no differences in task-oriented thoughts for any conditions.

Social-oriented (peripheral) cognitions were examined for any affective relationships. There was a significant relationship for leader condition and favorable social-oriented thoughts. Not surprisingly, social-oriented leaders produced more favorable social-oriented thoughts. There was also a significant interaction between leader sex and respondent sex. Respondents in opposite leader sex conditions generated more favorable social-oriented thoughts than same sex conditions. Also found was a marginal relationship for leader condition and respondent sex. Socially-oriented males generated more favorable social-oriented thoughts than all other conditions. Task-oriented males had the least tendency to rehearse favorable socially-oriented thoughts. A significant finding regarding neutral affect and
social-oriented tendencies involved an interaction for leader condition and respondent sex. The direction of this finding was somewhat the reverse of the favorable affective tendencies for leader condition and respondent sex. In this case, social-oriented females and task-oriented males had the most neutral social-oriented thoughts while social-oriented males and task-oriented females had the least neutral tendencies.

The relationship between leader sex and orientation and favorable social-oriented affect is fairly clear cut and follows implicit directions. However, when the data are examined from a group perspective, all but one of the significant findings disappear. For groups, there was a significant tendency for socially-oriented conditions to generate more favorable socially-oriented thoughts.

Treatment groups' task-oriented (central) tendencies were examined with those of the control. Since the control individuals had no small group cluster, a different cognitive ratio was formulated. Both treatment groups and control individuals had their total thoughts subtracted from their task-oriented thoughts to form a task-oriented tendency. The control group tended to be significantly more task-oriented in their thinking than the treatment groups.

There were no correlations between raw central and raw peripheral thoughts for group perceptions or individual perceptions regardless of subjects' sex.

In an effort to find conclusive support for task performance and task-oriented (central) or social-oriented (peripheral) cognitions,
correlations were conducted. There were no significant correlations for task-socially tendency and task performance or raw social-oriented thoughts and task performance. There was a positive correlation between raw task-oriented thoughts and task performance (DF 21, $R = .453$, $p < .05$). However, this is in the opposite direction than one would reasonably predict it to be. As raw task thoughts went up, task scores went up, which means the groups performed worse on the Taylor campus survival kit.

Because of the well-supported differences between task and group cluster tendencies, a test for correlations between these two variables with task performance was conducted. This procedure helped isolate reasons for the confusing results in this area. There was no significant correlation for group cluster tendencies and task performance. There was a significant positive correlation for task cluster tendencies and task performance (DF 21, $F = .438$, $p < .05$). However, again this was in the opposite direction from what one would reasonably assume. As task cluster tendencies go up, so does task performance scores, which means the groups were performing worse.

There are three possible explanations for the findings in the areas of task-oriented and social-oriented cognitions with regard to their relationship to each other and task performance. The first explanation attempts to determine why there was no significant relationship for task (central) and social (peripheral) tendencies. The task-oriented and socially-oriented dependent constructs were based on Petty and Cacioppo's central and peripheral cognitive tendencies.
(1981, 1986). When constructing these measures and training judges to recognize and differentiate them when scoring thought lists, the researcher made an error. Petty and Cacioppo claim that one of the fundamental traits of central and peripheral routes of cognitive processing is that central or peripheral cognitions are defined by the individual and cannot be universally identified. A central thought is a cognition that involves careful, thoughtful and logical thinking about the prime issue relevant components of a message or, in this case, a task. A peripheral thought deals with such components as source credibility or attractiveness, reward potential, or some other socially affective element other than the actual message (or in this case, task) relevant information. In this study, a peripheral cognition was defined by socially-oriented thinking. Because only the subjects themselves had an accurate idea as to what route their cognitions followed, reliable task-social dependent measures were not likely obtained. No doubt the judges were able, for the most part, to detect some task-oriented (central) and social-oriented (peripheral) cognitions, but they failed to detect them all; furthermore judges were without strong agreement on this issue. Inter-coder reliability scores for task-social tendencies were \( r = .369, p < .10; r = .512, p < .02; r = .539, p < .01 \), which is a range of mild to moderate agreement. It is certainly possible that the two cognitive routes, as defined in this study, had no relationship or played no role in the cognitive workings involved in small group behavior. Future studies in this area must heed the shortcomings of the present research and strive towards more
operative and valid cognitive measures. Cluster tendencies indicate that there are distinct patterns to subjects and groups cognitive responses. However, any observations beyond simple inferences to cognitive type and affective direction (valence) cannot be made.

The second possibility for the mixed results for the task-oriented (central) and social-oriented (peripheral) cognitive relationship to each other and task performance is based on Petty and Cacioppo's latest claim that the Elaboration Likelihood Model (ELM) is not a model of cognitive functioning but rather a specific model of persuasion (Petty, Cacioppo, Kasmer, & Haugtvedt, 1987). In their words, "the ELM does not address questions such as how many (and which) affective experiences are universal ... or whether the brain hemispheres differ in their processing of affect. This should not be surprising since the ELM is a theory of attitude change, not a theory of emotion or brain functioning" (Petty, Cacioppo, Kasmer, & Haugtvedt, 1987, p. 258).

Originally, they implied that ELM was a theory of cognitive information processing and there is evidence cited in their own work to contradict their present claim that ELM does not, to a fairly large degree, involve cognitive functioning (see Petty & Cacioppo, 1986). Still it would at least appear that ELM's central and peripheral tendencies are not universal to all information processing situations and appear to be unique to only attitude change and behavior. Consequently, attempting to use central and peripheral definitions verbatim in an effort to study and understand cognitive tendencies and behavior in small group situations may be inappropriate and the present results support this
possibility. While there was some effort in this study to shape the central and peripheral routes to fit this dynamic, the reconstruction did not go far enough. Perhaps there are cognitive routes in small group behavior that work along the line of ELM's central and peripheral tendencies, but they have yet to be clearly identified.

The third and final explanation for the mixed evidence for task (central) and social (peripheral) cognitions lies in the type of task used in this study. The Taylor campus survival kit (1987) requires groups or individuals to list twenty items in order of importance for survival during one's first year at college. Several other task instruments have used this approach, such as the NASA exercise "Lost on the moon" (Pfeiffer & Jones, 1969) or "Wilderness Survival" (Pfeiffer & Jones, 1976). Basically the groups rank items in importance to a specific situation. These rankings are then scored against those of experts in that particular field. In the case of this task, the college survival kit, the experts were students who were members of Student Government and were leaders on campus. Logically, the students had successfully survived college and even flourished, so their composite answers should comprise a fairly accurate order for successful survival in college. Group task scores that came closest to the experts' rankings would be considered having performed the task at a higher level than those scores further from the master score. This may be true but it is also possible that the Taylor campus survival kit is little more than a survey of item preference for an efficacious freshman year of college. This may possibly explain why groups with
high levels of raw task-oriented (central) processing or task cluster tendencies had significantly higher task performance scores than those low in raw task-oriented or task cluster tendencies cognitions. But these high task scores would mean that these groups performed worse on the task. Thus when groups thought more carefully and logically about the task they actually did worse than groups that do not think highly or thoughtfully about the task. This is contradictory to what would be considered the logical pattern of higher task-relevant thoughts leading to better task performance. What may have occurred is that higher raw task-oriented and task cluster oriented tendencies lead to significantly different attitudes toward the survival kit items and thus different task scores. This would be consistent with previous attitude research regarding information processing and very much in harmony with the Elaboration Likelihood Model (see Petty & Cacioppo, 1981, 1986). Future research in this area should avoid tasks based solely on group attitudes and use tasks that measure performance efficacy along other dimensions.

Several problems with methodology plagued this study. The first and most important is a lack of sufficient group numbers per cell. Even with the adequate number of six per cell, the findings are still suspect. This is evident by the observation that many significant findings for individual perceptions disappeared when examined from a group viewpoint. In addition, for analysis of repeated measures, it was necessary to have equal numbers per cell. This was not the case in
the present study. Thus, some crucial interpretations could not be measured with regard to repeat measures such as cluster tendencies.

The often chaotic situation surrounding recruitment of group subjects no doubt affected internal reliability. Several treatment conditions required recruitment of passers-by and even the calling of a fraternity pledge brother in one case. Many times subjects sat around for up to a half hour waiting for their groups to be filled. Many groups were lost due to inadequate numbers.

Finally, three other artifacts threatened this study. These included the artificial nature of the task, the lack of interaction time, and the restrictive nature of the leader condition. While we have suggested the Taylor campus survival kit may be a survey, it still follows the guidelines of many previous experimental tasks. In fact, the study has two strong points: it is relevant to the subjects and it has good potential for covering actual research objectives. But it suffers, as so many experimental tasks do, from the artificiality of the laboratory. Would individuals and groups actually interact in "real world" situations as they did to this one? In addition, time sequence hurt the validity of the present study. The task times ranged from nine minutes to a half hour. It is questionable whether the subjects had enough time to parallel behaviors they would have in actual small group task interactions outside the laboratory. A final consideration is the restrictive nature of the leaders. While the leaders in this study manipulated their conditions very well, some extraneous factors hindered the evaluations of them. The leaders were
trained to be passive and allow the group to make all the decisions. Because of this, the subjects paid little attention to them. Also subjects were originally told the study was a small-group interaction study; no mention of leadership was made in order not to tip off the subjects to the experiment's real purpose. The results indicated that it is certain the treatment groups were affected by specific leader conditions, but it is possible that due to lack of time, leader passivity, and the experimental label that leadership impact was greatly reduced. This may account for the extremely low level of leader thoughts.

With regard to thought listing and scoring subjects' cognitions, it is clear that using judges to score central and peripheral tendencies was a mistake which affected that particular section of the study. Any future examination of subject cognitions based along the central-peripheral dynamic should allow subjects to score their own cognitions. Concise definitions of the factor the researcher is looking for should be enough information for a subject to score their thought list without revealing the true purpose of the study. This study's results lend support to the idea of allowing subjects to completely score their cognitive lists \textit{WHENEVER POSSIBLE}! Due to the complex and highly personal nature of several cognitive elements, this appears to be the only way to insure accuracy and reliability.

Suggestions for future small group methodology and design should include adequate numbers for each treatment condition. The numbers should be at least six per cell with double that number probably being
the ideal amount. Anything beyond that would add power to the findings, but due to the large number of subjects required, anything more than twelve groups per cell is highly unlikely. If repeated measures are to be examined, one must insure that all conditions have equal n. Finally, subjects should be either paid for their time or provided some other incentive to insure attendance during their appointed treatment condition.

The significance of this study is far reaching along several lines. The primary reason is that now there is some conception of the cognitive workings involved in the leadership-small group dynamic. The findings may be crude and mixed, but they provide a sufficient foundation on which to build future studies in this area. Two areas for future research include: the relationship between group and task cluster tendencies and their relationship, if any, to task performance; and further study of central and peripheral processing relationships to small group behavior and task efficacy. Cognitive analysis should be extended to other areas of small group research, including group polarization (Risky Shift), groupthink, small group problem solving processes, particularly Hoffman's valence dynamic (1978), and networks, as well as other leadership dimensions.

The results of this study and future research along these lines eventually could lead to the simple set of hypotheses stating that some tasks, due to their complexity or exigency, need a type of leader that can enhance more task-oriented or central route cognitions by the group members. Conversely, some tasks may be extremely cogent and only
require that the leader maintain group harmony and pleasant working conditions. In other words, try to stimulate members to have favorable cognitions about an otherwise boring and simple task. There should be little doubt that the cognitive-small group link goes well beyond the parameters set by the results of the present study.

Finally, the findings of the present research hold potential for the future of information processing and cognitive response analysis. It is time for the field to branch out and refine itself. The present study attempted to apply it to a new area and open doors to further research in the field. But what is really needed in the field of information processing is a movement beyond simple dichotomies or trichotomies, such as, central or peripheral, or group, leader and task cluster tendencies. Two prominent pioneers of modern day theories on attitudes and behavior, Fishbein and Rokeach, have noted that the relationship between attitudes and behaviors is a complex and interactive one based on intricate belief hierarchies and value organizations (Fishbein, 1967; Rokeach, 1969). It is going to take more than bivariate and trivariate methodologies and subsequent models to explain what really is occurring when an individual processes information.
APPENDICES
APPENDIX A

GROUP LEADERS RESPONSIBILITIES
GROUP LEADERS RESPONSIBILITIES

1. Be at least 15 minutes early to each session block (i.e. 9-12, 1-4).

2. Wear nice clothes (work clothes).

3. No matter what condition you are in, always be considerate and polite.

4. Always allow the group members to make all final task decisions.

5. In order to stimulate group discussions you may offer suggestions, but these suggestions should be in the form of observations for discussion (i.e. I can see why a Personal Computer would be important, but some majors such as drama or nursing don't really require its use. What do you all think?). Never try to impose your own personal opinions on the task to the group members.

6. Do not, DO NOT allow other groups' decisions to become part of your present group information pool. Each group is a fresh unique entity on to itself and should remain free to make its own decisions.

7. Try to manipulate the condition to the best of your ability, but above all remain sincere and credible.

SPECIFIC ROLE GUIDELINES

Social Oriented Leader

1. Above all the social oriented leader must be concerned with the harmony and comfort of the group. If you have ever been involved with a fraternity or sorority rush than you have some idea of what I'm talking about. You must be friendly and disarming but remain sincere and credible.

2. At the beginning of the task the social leader will use 3-5 minutes for introductions of each member in the group and general socializing.

3. The social group leader will make rewarding comments (when appropriate) and will facilitate a great deal more discussion among the group members than the task-oriented leader.

4. The social group leader will offer more statements to open discussion.
5. The social group leader will not attempt to dissuade any extraneous group discussion unless it becomes absolutely necessary.

6. The social leader will not emphasize the importance of finishing the task on time or doing it completely correct.

7. The social group leader will use the group members' first name when addressing them.

8. In your own mind, over the next few days, try to picture how a social leader would act. (Perhaps you have had a boss that fits this description.) You should style your social leader role based on my outline and your own assumptions.

**TASK ORIENTED LEADER**

1. The task-oriented leader is not mean spirited or cold, they are just concerned with the prompt and efficacious completion of the task.

2. There will be no introductions with the task-oriented leader, they will go immediately into the directions and goals of the task at hand.

3. The task-oriented leader will emphasize the importance of completing the task on time and as correctly as possible.

4. The task-oriented leader will not give out rewarding statements nor will they often facilitate long discussions.

5. The task-oriented leader will (politely) discourage extraneous group discussion.

6. The task-oriented leader will not use group members' first name when addressing them.

7. Finally, picture in your mind what you would consider a task-oriented leader to be like. (Again, perhaps you have had a boss like this at sometime.) You should style your task-oriented leadership style based on your own assumptions and my outline.
APPENDIX B

COLLEGE STUDENT'S SURVIVAL KIT
1. On a scale of one to nine with one being extremely unfriendly and nine being extremely friendly, how friendly was the group facilitator.

   extremely unfriendly 1 2 3 4 5 6 7 8 9 extremely friendly

2. On a scale of one to nine with one being extremely formal and nine being extremely casual, what best describes the leadership behavior of the group facilitator.

   extremely formal 1 2 3 4 5 6 7 8 9 extremely casual

3. On a scale of one to nine with one being extremely unattractive and nine being extremely attractive, how attractive was the facilitator?

   extremely unattractive 1 2 3 4 5 6 7 8 9 extremely attractive

4. On a scale of one to nine with one being extremely unlikable and nine being extremely likable, how likeable was the facilitator?

   extremely unlikable 1 2 3 4 5 6 7 8 9 extremely likable

5. On a scale of one to nine with one being not very sociable and nine being very sociable, how sociable was the facilitator?

   not very sociable 1 2 3 4 5 6 7 8 9 very sociable

6. On a scale of one to nine with one being not very concerned with the task and nine being very concerned with the task, how concerned was the facilitator with the task?

   not very concerned 1 2 3 4 5 6 7 8 9 very concerned
7. On a scale of one to nine with one being very socially oriented and nine being very task oriented, what number best describes the leadership behavior of the facilitator?

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very social oriented</td>
</tr>
<tr>
<td>2</td>
<td>Very task oriented</td>
</tr>
</tbody>
</table>

8. On a scale of one to nine with one being extremely unpleasant and nine being extremely pleasant, how extremely pleasant was your facilitator?

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extremely unpleasant</td>
</tr>
<tr>
<td>2</td>
<td>Extremely pleasant</td>
</tr>
</tbody>
</table>

9. On a scale of one to nine with one being extremely unintelligent and nine being extremely intelligent, how intelligent was your facilitator?

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extremely unintelligent</td>
</tr>
<tr>
<td>2</td>
<td>Extremely intelligent</td>
</tr>
</tbody>
</table>

10. On a scale of one to nine with one being extremely unqualified and nine being extremely qualified, how qualified was your instructor?

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extremely unqualified</td>
</tr>
<tr>
<td>2</td>
<td>Extremely qualified</td>
</tr>
</tbody>
</table>
COLLEGE STUDENT'S SURVIVAL KIT

INSTRUCTIONS: An eighteen-year-old high school graduate is preparing to leave for college away from home. You have been asked to help this college freshman with the packing task by ranking the following items in terms of their importance to survival in college. Start with "1" for the most important and rank each item to "20" for the least important.

You may assume our future college student has packed the necessary clothes and personal items. The sex of the student and the specific college chosen are not as important to this task as the criterion, survival!

<table>
<thead>
<tr>
<th>Item</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS BOOK</td>
<td>1</td>
</tr>
<tr>
<td>ALARM CLOCK</td>
<td>2</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>3</td>
</tr>
<tr>
<td>BOOK BAG</td>
<td>4</td>
</tr>
<tr>
<td>BRIEFCASE</td>
<td>5</td>
</tr>
<tr>
<td>HIGH SCHOOL YEARBOOK</td>
<td>6</td>
</tr>
<tr>
<td>DICTIONARY</td>
<td>7</td>
</tr>
<tr>
<td>HOT PLATE</td>
<td>8</td>
</tr>
<tr>
<td>PENCILS, PENS, PAPER</td>
<td>9</td>
</tr>
<tr>
<td>PERSONAL COMPUTER</td>
<td>10</td>
</tr>
<tr>
<td>POCKET CALCULATOR</td>
<td>11</td>
</tr>
<tr>
<td>PORTABLE COOLER</td>
<td>12</td>
</tr>
<tr>
<td>PORTABLE TYPEWRITER</td>
<td>13</td>
</tr>
<tr>
<td>POPCORN POPPER</td>
<td>14</td>
</tr>
<tr>
<td>&quot;TIME&quot; MAGAZINE SUBSCRIPTION</td>
<td>15</td>
</tr>
<tr>
<td>STOP WATCH</td>
<td>16</td>
</tr>
<tr>
<td>STEREO</td>
<td>17</td>
</tr>
<tr>
<td>UMBRELLA</td>
<td>18</td>
</tr>
<tr>
<td>WALL POSTERS</td>
<td>19</td>
</tr>
<tr>
<td>WEBSTER'S GUIDE TO AMERICAN COLLEGES</td>
<td>20</td>
</tr>
</tbody>
</table>
EXPERT RANKING AND RATIONALE:

Experts: Student members of the "University President's Leadership Council" ranked the following items on their importance and value for survival in college. Although the specific items may differ slightly from campus to campus, the following suggests that college students see survival as a real concern and will use what is necessary to succeed in their pursuit of an education.

1. Alarm Clock - Of all the items, the alarm is a must for busy, time-driven students who get too little sleep and tend to catch Zs when they should be in class.

2. Pencils, pens, paper - Can't get started with your studies without your school tools.

3. Dictionary - Always helpful to check for spelling, plurals, and usage.

4. Portable typewriter - Most profs require typed papers. Gives work a polished look. (Note: Need to know how to type if this is to help!)

5. Pocket Calculator - Time saver, error-free, good for calculus and balancing the checkbook.

6. Book Bag - Helps lug those heavy books around. Also a good place to stow granola bars.

7. Address Book - Guys and gals need their little black book to help with the social side of college.

8. Bicycle - The best and cheapest way to get around campus. No hassles with parking places or traffic tickets.

9. Umbrella - Essential foul weather protection for anywhere except the University of Saudi Arabia. Even there, it would help protect you from the sun. Also useful for golf outings or at the beach.

10. Stereo - Essential for "study breaks" and to provide background music for "all nighters."

11. Personal Computer - Expensive but great for writing papers and keeping test files.

12. Hot Plate - Convenient when you crave a cup of instant soup or a late night snack.
13. Briefcase - Preppy but convenient, especially popular with Bus Ad majors.

14. Portable Cooler - Good for trips and when it's "party time!"

15. Popcorn Popper - Great source for late night study food (see #12).

16. Subscription to Time Magazine - Timely way to keep up with the outside world. Essential when you take a speech class.

17. Wall Posters - Easy way to decorate drab dorm rooms.

18. Stop Watch - Useful for jogging, timing roommate's phone calls and boiling eggs (see #12).

19. Webster's Guide to American Colleges - Helpful if you've decided to transfer.

20. High School Yearbook - Leave it home! No one cares how popular you were back home or how great you looked before you gained 15 pounds eating dorm food.
Call for Volunteers

Your participation as subjects in the study I'm conducting as part of my masters requirement would be greatly appreciated. I will need no more than 30-35 minutes of your time. I know this is an imposition and I hope you will understand. The days of the experiments will be September 22, 23, 24, 29, 30, and October 1. This will be held in rooms CEBA 286 (Engineering Building) and FA 516 (Dean's Conference Room for Arts & Sciences). There will be three morning sessions (9-12) and three afternoon sessions (1-4) each research day.

There is a master experiment schedule being passed around your classroom. Each group will consist of three males and three females. Please sign your name to the one group that best fits your schedule and also leave your school extension or phone number so one of my assistants can call and remind you the night before the study. Please be on time for your group. You will be debriefed at the end of the study. At the very least you might have a chance to meet some people so it won't be a total loss. Thanks for your cooperation.

For your convenience please fill in your group date, time, and building in these spaces and hold on to this sheet.

Date ____________ Time _____ Building ____________

Thanks again,

Thomas A. Buhr
Please list all your thoughts for the previous 20 minutes while you have been working on this task in the small group. List each thought or description of a thought in its own individual box. Spelling and punctuation do not count. However, please write clearly and legibly. Please be as honest as you can about your thoughts and their description, no one will even know that these thoughts are yours. It is essential that you be totally honest and complete in your descriptions. Thank you for your time. You have five minutes. Enter the last four digits of your social security number here ___ ___  

1. 

2. 

3. 
REFERENCES


