TASK EVALUATION DEMAND AND COMMUNICATION NETWORK: EFFECTS ON GROUP PERFORMANCE

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Task Evaluation Demand and Communication Network: Effects on Group Performance

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An Abstract

Presented to the

Graduate and Research Council of

Austin Peay State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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by

Christopher Coleman

April 1993

ABSTRACT

This study investigates the mediating effect of task evaluation demand upon group communication and performance. Three hypotheses were generated: (a) low evaluation demand task scores will be significantly better than high evaluation demand task scores, (b) in the high evaluation demand task the three-member comcon groups will perform significantly better than the three-member wheel groups, and (b) in the low evaluation demand task there should be no significant difference in performance between the two types of groups.

Undergraduate students served as voluntary subjects. Two types of groups, based upon communication network differences, were looked at. The groups participated in group decision-making tasks. There were two decision tasks employed. Both tasks were modifications of the NASA Moon Survival Problem (Hall & Watson, 1970).

The results revealed no significant differences based upon the two levels of communication and the two levels of evaluation demand. Furthermore, no significant interaction effects were revealed between type of communication and level of evaluation demand. Further analyses support the assumption that the low evaluation demand scores were indeed lower in evaluation demand than the high evaluation demand scores. These results suggest the presence of a third factor (i.e., an individual v. group factor) affecting performance.

Task Evaluation Demand and Communication Network: Effects on Group Performance

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April 1993

To the Graduate and Research Council:

I am submitting herewith a Thesis written by Christopher Coleman entitled "Task Evaluation Demand and Communication Network: Effects on Group Performance". I have examined the final copy of this paper for form and content and I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts with a major in general psychology.

Major Professor

We have read this thesis and recommend its acceptance:

Second Committee Member

Third Committee Member

Accepted for the Graduate and Research Council

Dean of the Graduate School

ACKNOWLEDGMENTS

I would like to extend my gratitude to Dr. Samuel Fung for his guidance and assistance. I would also like to thank Dr. Mabry for her time and advice.

I offer special thanks to Dr. Charles Grah for his continual encouragement, friendship, guidance, patience and assistance.

I appreciate the continual support that my family has provided throughout my educational career.

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CHAPTER 1

Review of the Literature

Introduction

Past research in group behavior and performance has gone far to explicate the structure and systems of groups. The research has generated more questions. The present study is an attempt to answer some of these questions.

Data from various lines of investigation collectively suggest three facets of the task situation that appear to mediate the impact and importance of communication on group performance. These three facets are: task structure, information requirement, and evaluation demand. The present study was designed to investigate the mediating effects of evaluation demand between communication and group performance.

Communication Network

The question of which type of group, or individual, best fits which type of task remains to be completely resolved.

Burleson, Levine, and Samter (1984) compared the effectiveness of noninteractive and interactive group decision-making procedures on the quality of group decisions reached on complex problems. They looked at two different noninteractive decision-making procedures, the "staticized" procedure and the "nominal group technique".

In the "staticized" decision procedure (Lorge, Fox, Davitz, & Brenner, 1958) no communication occurs among group members. Instead, individual judgments are statistically averaged to produce a "group" decision. In the "nominal group technique" (Delbecq, Van der Ven, & Gustafson, 1975) only limited communication among group members under highly restrictive conditions is permitted. Communication among group members is mediated by a moderator who controls the content of messages and the channels through which they are conveyed. This method seeks to maximize the rational process and eliminate problems arising from open social interaction. Burleson et. al. (1984) found that interactive groups performed better on the complex task used than did noninteractive groups.

The contention that a free interaction decision procedure facilitates group decisions is frequently based upon some variant of what might be termed "the group synergy hypothesis" (Hall & Watson, 1970). This hypothesis maintains that the quality of group outcomes exceeds what would be expected from a simple sum of individual contributions.

Other, more specific, reasons for decision facilitation under conditions of free interaction have been proposed (Davis, 1969; Fisher, 1980; and Shaw, 1981). These reasons include: summation of individual contributions, rejection of incorrect suggestions and the

checking of errors, the greater amount of information available to the group, questioning and debating that stimulates new or different ideas, and the more easily accomplished exchange of ideas in interacting groups.

There are also those who question the importance of communication for decision-making efficacy. It has been suggested that communication inhibits optimal group decision performance (Davis, 1969; Hewes, 1986; Steiner, 1972). This view is reflected in Steiner's (1972) equation: "Actual productivity = potential productivity - losses due to faulty processes" (p.9).

Hirokawa (1990) postulates that communication effects upon decision-making performance is mediated by the task situation. Therefore, these effects would best be conceptualized within a task-contingency perspective.

Evaluation Demand

Hoffman and Smith (1960) studied the effects on rated individual behavior of group characteristics, problem requirements, role structure, and certain interactions among these. They found that particular problem requirements provide the conditions in which the characteristic responses of the individual group members interact to produce a unique group adaptation to the problem. Interrelationships among problem differences, characteristics of group membership, and the potential development of role structures as they affect certain

behaviors of group members was looked at. The effects of different group problems were a major variable in this study. For all six behaviors the differences among problems were a significant source of variance. The results of this study show that each problem elicits a relatively distinct pattern of behaviors, emphasizing the different requirements each of the four problems placed on the groups. Although the authors did not look at the adequacy of the group decisions, this study does indicate the importance, in research on small-group process, of identifying the nature of the task given to the group.

Past research indicates that group communication is less important for effective decision performance when the task is simple. Communication takes on more importance as the task becomes more complex (Shaw, 1978).

One source of task complexity is evaluation demand. Evaluation demand refers to the amount of effort that a group is required to exert to determine whether a choice is a viable one. According to Hirokawa (1990) the evaluation demand of a task is affected by three elements: (a) solution multiplicity, the number of choices deemed "correct"; (b) criteria clarity, the extent to which the standards of evaluation are clearly presented; and (c) objective verifiability, the extent to which a choice can be definitively established to be correct.

There is research evidence that group communication

tends to play a less important role for effective group task performance when the task has low evaluation demand as opposed to high evaluation demand (Davis, 1969; Hill, 1982; Shaw, 1981).

Hirokawa (1990) offers a theoretical framework that provides an explanation of the precise nature of the influence of task factors. This framework is developed within the context of functional interaction theory (Gouran & Hirokawa, 1983, 1986; Hirokawa, 1985, 1988; Hirokawa & Scheerhorn, 1986). According to this theory group communication functions as a means to an end. In other words communication is used, by group members, to overcome the demands which must be surmounted in order for the group to be successful in decision-making.

Hirokawa (1990) summarized the basic framework of the theory. This framework includes the following: (a) all decision tasks impose specific demands on the group that must be overcome in order for successful task performance to result; (b) demands imposed on a group vary according to the specific characteristics of the task; and (c) task demands are overcome through both input and process variables. Thus, Hirokawa (1990) proposes that when the evaluation demand of a task is low, group performance is dependent largely on input variables. These input variables include the ability of group members to search through optional choices, recognize the correct choice, and

demonstrate its correctness using established evaluation criteria. In this case group performance is a function of the individual evaluation abilities of group members. Furthermore, as the evaluation demand of a task increases, group performance becomes increasingly dependent upon process variables. This is because group members can no longer rely upon individual reasoning to evaluate choices. Consensual validation becomes increasingly important as a means of arriving at a collective choice. Thus, communication becomes a more important factor. According to Hirokawa (1990) communication facilitates the generation of optional choices and the proper evaluation of available choices.

Task

The decision-making task used in this study was the NASA Moon Survival Problem developed by Hall and Watson (1970). This task was employed because it has a unique best solution, and thus provides an objective index of the evaluation of the adequacy of group decisions (Hall and Watson, 1970).

Hypotheses

It is expected that when the evaluation demand (i.e., criteria identification and solution assessment) of a task is low, group performance is dependent largely on input variables (i.e., individual skills and knowledge and level

of task motivation). When the evaluation demand of a task is high, group performance is expected to be dependent largely on process variables (i.e., group interaction or communication).

Hypothesis 1: the low evaluation demand task scores will be significantly better than the high evaluation demand task scores.

Hypothesis 2: in the high evaluation demand task the three-member comcon groups will perform significantly better than the three-member wheel groups.

Hypothesis 3: in the low evaluation demand task there should be no significant difference in performance between the two types of groups.

From the stated hypotheses it is expected that a main effect for both independent variables will be found. Furthermore, in the high evaluation demand task the three-member comcon groups should perform significantly better than the three-member wheel groups. In the low evaluation demand task there should be no significant difference in performance between the two types of groups.

CHAPTER 2

Method

Subjects

Approximately 132 undergraduate students, from six General Psychology classes Austin Peay State University, served as voluntary subjects. Subjects were given varying amounts of extra credit for participating. Subjects were randomly assigned to 44 three-person groups.

Materials

Three rooms were used in which the tasks were performed. In the wheel groups one subject (designated the "hub") communicated with the other two members of the group who were isolated in separate rooms. The "hub" member was allowed to communicate to only one other member of the group at a time. In the comcon groups the three subjects performed the task together in one room.

Procedure

Two types of three-member groups were used. The difference between the two groups was based upon the type of communication network. One type was a three-member wheel group and the other was a three-member comcon group. In the wheel group one member (designated the hub) was free to interact with the other members but the other members

were only free to interact with the one member designated the hub. In the comcon group each member of the group was free to interact with all the other members of the group.

Each member of each group was given an individual decision form to be filled out before group interaction. The decisions on the individual forms remained unchanged after group interaction began (see Appendixes A, B, C, and D). Experimental condition codes can be found in Appendix I.

In the wheel group the member designated the "hub" was also designated the "leader". This member was randomly assigned with the exception that females were always assigned this position (unless the group consisted of all males). One member in the comcon group was also randomly assigned as the "leader", with the same exception noted above. The leader of each group filled out the group decision form for that group (see Appendixes E, F, G, and H).

The groups participated in group decision-making tasks. Groups were randomly assigned to the experimental conditions. Expert decisions on the tasks served as the controls.

Groups were given unlimited time to complete the tasks. The time it took for the groups to reach a group decision was recorded.

Since group decisions amounted to rank orderings of

standard items, it was possible to compare group orders with the expert rank ordering (see Appendix J for keys) supplied by NASA as a means of quantifying decision adequacy. The quantified decision adequacy became the score for that group.

Tasks

There were two decision tasks employed. One task was a high evaluation demand task and the other a low evaluation demand task.

Both of these tasks were modifications of the NASA Moon Survival Problem (Hall & Watson, 1970). These modifications were based upon a pilot study which determined the relative evaluation demands of the two modifications.

The high evaluation demand task required subjects to rank, in order of their importance for survival, 5 items of equipment taken from the original 15 items on the NASA Moon Survival Problem. Thus, the total decision product for both individuals and groups is composed of 5 interdependent judgements. The modified NASA Moon Survival Problem concerns the plight of the crew of an ill-fated space flight; background information supplied to subjects indicates that they are to think of themselves as crew members. The story line indicates that their spaceship was originally scheduled to rendezvous with a mother ship on the lighted surface of the moon; due to mechanical

difficulties, however, they have been forced to crashland some 200 miles from the rendezvous point. Survival depends upon the crew reaching the mother ship. It is further indicated that there are 5 items of equipment which must be evaluated with respect to their importance for insuring survival during the crew's 200 mile cross-country trek. Each subject was asked to rank in order, on the supplied form, the 5 items in terms of their relative value and utility for survival. These original rankings remained unchanged. The 5 items used were the third, fourth, fifth, sixth, and seventh items of importance, from the original 15 items listed on the NASA Moon Survival problem, as ranked by the experts in Houston, Texas (see Appendix J). Subjects were given unlimited time to arrive at a group decision to the problem. The designated "leader" was given a form on which to record the group decision.

An expert answer for the task was obtained from the Crew Equipment Research Section of the NASA Manned Spacecraft Center at Houston, Texas (Hall & Watson, 1970). Performance on the task was evaluated on the basis of this objectively correct criterion.

The low evaluation demand task consisted of removing all but 5 of the items to be rank ordered. The 5 items used were the first, fourth, seventh, tenth, and thirteenth items of importance, of the original 15 items on the NASA Moon survival Problem, as ranked by the experts in Houston,

Texas (see Appendix J). The rest of the task proceeded as the high evaluation demand task.

CHAPTER 3

Results

Since the group decisions amounted to rank orderings of standard items, it was possible to compare group orders with the expert rank ordering (Appendix J) supplied by NASA. This comparison was used to quantify decision adequacy. The quantified decision adequacy is defined as the absolute difference between the group rank orders and the expert rank orders. This absolute difference became the score for that group. A 2x2 ANOVA design was used to analyze the data. The results are presented in Table 1.

Table 1

Means and Standard Deviations.

	Mean	SD	F	p
Comcon	4.758	5.079	2.785	0.103
Wheel	4.083	4.463		
Low Eval. Dem.	4.288	4.595	0.429	0.516
High Eval. Dem.	4.553	4.960		
Comcon/Low Eval. Dem.	4.576	4.931	0.060	0.808
Wheel/Low Eval. Dem.	4.000	4.350		
Comcon/High Eval. Dem.	4.940	5.339		
Wheel/High Eval. Dem.	4.166	4.676		

The results of the ANOVA revealed no significant differences based upon the two levels of communication

(i.e., comcon and wheel), $F(1,40)=2.785$, $p<.103$, and the two levels of evaluation (i.e., high and low), $F(1,40)=.429$, $p<.516$. Furthermore, no significant interaction effects were revealed between type of communication and level of evaluation demand, $F(1,40)=.060$, $p<.808$. Thus, no support was found for hypothesis 1 and hypothesis 2. Hypothesis 3 predicted no significant differences, on performance in the low evaluation demand task, between the two types of groups. The results, $F(1,40)=.060$, $p<.808$, lend support to hypothesis 3.

A t-test was performed to assess if there was a significant difference between individual scores, before group interaction, in the low evaluation demand condition and the high evaluation demand condition. The results, $t(130)=-2.744$, $p<.007$ support the assumption that the low evaluation demand task was indeed lower in evaluation demand than the high evaluation demand task (see Table 2).

Table 2

Individual Scores.

	Mean	SD	t	p
Low Eval. Dem.	4.182	2.007	-2.744	0.007
High Eval. Dem.	5.212	2.297		

The results of the t-test indicated that the data should be analyzed by way of a 2X2X2 mixed ANOVA design.

This design included the two levels of evaluation demand, the two types of groups based upon communication networks, and the individual vs. group factor.

Although it was not hypothesized, a two-way interaction was revealed for the evaluation demand (high vs. low) factor and the individual vs. group factor, $F(1)=8.692$, $p<.005$. Also, a significant three-way interaction effect was revealed for the communication network (wheel vs. group), evaluation demand (high vs. low), and individual vs. group factors (individual scores before group interaction vs. group scores after group interaction), $F(1)=5.051$, $p<.03$. This three-way interaction results in the need for further interpretation of the two-way effect reported above.

CHAPTER 4

Discussion

In this study it was expected that when the evaluation demand of a task was low group performance would depend largely on input variables. Conversely, when the evaluation demand of a task was high it was expected that group performance would depend largely on process variables. Thus, it was hypothesized that the low evaluation task scores would be significantly better than the high evaluation task scores. Furthermore, it was hypothesized that in the high evaluation demand task the three-member comcon groups would perform significantly better than the three-member wheel groups. However, this study found no significant differences to support these hypotheses.

A basic assumption of this study was that the low evaluation demand task was, indeed, lower in evaluation demand than the high evaluation demand task. The results supported this assumption and indicated the presence of a third main effect (i.e., individual vs. group).

Although no hypotheses were generated in relation to this third main effect, further analyses were performed. A three way interaction effect was revealed for the communication network (wheel vs. group), evaluation demand

(high vs. low), and individual vs. group factors.

These results indicate that the 2X2 design developed by the author was not adequate to analyze the data and test the hypotheses. A 2X2X2 ANOVA design would have been more appropriate. The results also indicate the need for further hypothesis generation and an alteration of the hypotheses used in this study. Thus, hypothesis 1 should be changed to state that the individual scores in the low evaluation demand task will be significantly better than the individual scores in the high evaluation demand task. An added hypothesis would be, in the high evaluation demand task the groups will perform significantly better than the individuals.

Further testing and analysis are needed to determine the support, or lack thereof, for these hypotheses and the significant effects of the factors involved.

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APPENDICES

APPENDIX A

Experimental Condition: NASA/CHI

Instructions: You are part of a three-member group. Each of you have been given an individual decision sheet. Please fill out this sheet before you interact with the other members of your group. Do not change your answers on this sheet after interaction has begun.

All members are allowed to interact and discuss the task in searching for your answer. The designated group leader will complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are five items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on through number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 50 feet of nylon rope

____ Stellar map (of the moon's constellation)

____ First aid kit containing injection needles

____ Solar-powered FM receiver-transmitter

Gender (check one): Male ____
Female ____

Class standing (check one): Freshman ____
Sophomore ____
Junior ____
Senior ____

Were you designated as the leader (check one): Yes ____
No ____

APPENDIX B

Experimental Condition: NASA/WHI

Instructions: You are part of a three-member group. Each of you have been given an individual decision sheet. Please fill out this sheet before you interact with the other members of your group. Do not change your answers on this sheet after interaction has begun.

The designated group leader will be allowed to interact with all members of the group in searching for your answer. The other two members of the group will only be allowed to interact with the leader. Each member of the group will be isolated from the other members in a separate room. The leader will be allowed to go from one room to the other and communicate with the other members in trying to solve the problem. The group leader will complete the group answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are five items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on through number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 50 feet of nylon rope

____ Stellar map (of the moon's constellation)

____ First aid kit containing injection needles

____ Solar-powered FM receiver-transmitter

Gender (check one): Male ____
Female ____

Class standing (check one): Freshman ____
Sophomore ____
Junior ____
Senior ____

Were you designated as the leader (check one): Yes ____
No ____

APPENDIX C

Experimental Condition: NASA/CLI

Instructions: You are part of a three-member group. Each of you have been given an individual decision sheet. Please fill out this sheet before you interact with the other members of your group. Do not change your answers on this sheet after interaction has begun.

All members are allowed to interact and discuss the task in searching for your answer. The designated group leader will complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are 5 items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on to number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 2 hundred-pound tanks of oxygen

____ Portable heating unit

____ Signal flares

____ First aid kit containing injection needles

Gender (check one): Male ____
Female ____

Class standing (check one): Freshman ____
Sophomore ____
Junior ____
Senior ____

Were you designated as the leader (check one): Yes ____
No ____

APPENDIX D

Experimental Condition: NASA/WLI

Instructions: You are part of a three-member group. Each of you have been given an individual decision sheet. Please fill out this sheet before you interact with the other members of your group. Do not change your answers on this sheet after interaction has begun.

The designated group leader will be allowed to interact with all members of the group in searching for your answer. The other two members of the group will only be allowed to interact with the leader. Each member of the group will be isolated from the other members in a separate room. The leader will be allowed to go from one room to the other and communicate with the other members in trying to solve the problem. The group leader will complete the group answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are 5 items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on to number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 2 hundred-pound tanks of oxygen

____ Portable heating unit

____ Signal flares

____ First aid kit containing injection needles

Gender (check one): Male ____
Female ____

Class standing (check one): Freshman ____
Sophomore ____
Junior ____
Senior ____

Were you designated as the leader (check one): Yes ____
No ____

APPENDIX E

Experimental Condition: NASA/CHG

Instructions: You are the leader of a three-member group. All members are allowed to interact and discuss the task in searching for a group decision. As the designated group leader you will complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are five items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on through number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 50 feet of nylon rope

____ Stellar map (of the moon's constellation)

____ First aid kit containing injection needles

____ Solar-powered FM receiver-transmitter

APPENDIX F

Experimental Condition: NASA/WHG

Instructions: You are the leader of a three-member group. You will be allowed to interact with all members of the group in searching for a group decision. The other two members of the group will only be allowed to interact with you. Each member of the group will be isolated from the other members in a separate room. You will be allowed to go from one room to the other and communicate with the other members in trying to reach a group decision. As the designated group leader you will also complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are five items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on through number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 50 feet of nylon rope

____ Stellar map (of the moon's constellation)

____ First aid kit containing injection needles

____ Solar-powered FM receiver-transmitter

APPENDIX G

Experimental Condition: NASA/CLG

Instructions: You are the leader of a three-member group. All members are allowed to interact and discuss the task in searching for a group decision. As the designated group leader you will complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are 5 items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on to number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 2 hundred-pound tanks of oxygen

____ Portable heating unit

____ Signal flares

____ First aid kit containing injection needles

APPENDIX H

Experimental Condition: NASA/WLG

Instructions: You are the leader of a three-member group. You will be allowed to interact with all members of the group in searching for a group decision. The other two members of the group will only be allowed to interact with you. Each member of the group will be isolated from the other members in a separate room. You will be allowed to go from one room to the other and communicate with the other members in trying to reach a group decision. As the designated group leader you will also complete the answer sheet for your group.

Task: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some two hundred miles from the rendezvous point. Survival depends on reaching the mother ship. There are 5 items of equipment that must be evaluated as to their importance for the two hundred mile trip. Below are listed the 5 items. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on to number 5, the least important. There is no time limit for completion of the task.

____ Food concentrate

____ 2 hundred-pound tanks of oxygen

____ Portable heating unit

____ Signal flares

____ First aid kit containing injection

APPENDIX I

Experimental Condition Codes

NASA/CHI=Comcon communication/High evaluation demand task, individual form.

NASA/WHI=Wheel communication/High evaluation demand task, individual form.

NASA/CLI=Comcon communication/Low evaluation demand task, individual form.

NASA/WLI=Wheel communication/Low evaluation demand task, individual form.

NASA/CHG=Comcon communication/High evaluation demand task, group form.

NASA/WHG=Wheel communication/High evaluation demand task, group form.

NASA/CLG=Comcon communication/Low evaluation demand task, group form.

NASA/WLG=Wheel communication/Low evaluation demand task, group form.

APPENDIX J

Rank Order Key to Tasks

High Evaluation Demand Task

2	Food concentrate	Satisfies basic energy requirements
4	50 feet of nylon rope	Useful in scaling cliffs, tying injured together,
	etc.	
1	Stellar map (of the moon's constellation)	Most important means of determining position and directions
5	First aid kit containing injection needles	Injection needles fitted to suit aperture quite useful
3	Solar-powered FM receiver-transmitter	Only useful if line-of-sight transmission is possible with limited transmission range

Low Evaluation Demand Task

2	Food concentrate	Satisfies basic energy requirements
1	2 hundred-pound tanks of oxygen	Absolute necessity for life support
5	Portable heating unit	Only useful if on the dark side of the moon
4	Signal flares	Possible distress signal once close enough to mother ship to be seen
3	First aid kit containing injection needles	Injection needles fitted to suit aperture quite useful

APPENDIX K

Consent Form

The purpose of this investigation is to evaluate the relationship between communication and decision performance. Your responses are confidential. At no time will you be identified nor will anyone other than the investigators have access to your responses. The demographic information collected will be used only for purposes of analysis. Your participation is completely voluntary, and you are free to terminate your participation at any time without any penalty.

The scope of the project will be explained fully upon completion.

Thank you for your cooperation.

I agree to participate in the present study being conducted under the supervision of a faculty member of the Department of Psychology at Austin Peay State University. I have been informed, either orally or in writing or both, about the procedures to be followed and about any discomforts or risks which man be involved. The investigator has offered to answer any further inquiries as I may have regarding the procedures. I understand that I am free to terminate my participation at any time without penalty or prejudice and to have all data obtained from me withdrawn from the study and destroyed. I have also been told of any benefits that may result from my participation.

Name _____
(print)

_____
(signature)

Date _____