

THE EFFECT OF THE QUALITY OF CONTRIBUTIONS ON
QUALITATIVE AND QUANTITATIVE PRODUCTIVITY
IN SMALL GROUP DISCUSSIONS

by

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CHAPTER 1

BACKGROUND CHAPTER

Authors of textbooks on group communication commonly make statements concerning the necessity of quality contributions to small group discussion without citing adequate evidence to support them. Often, these statements concern the importance of making contributions characterized as relevant, related, well-timed, and involving a single point. For example, in describing the characteristics of a good contribution, R. Victor Harnack and Thorrel B. Fest in Group Discussion: Theory and Technique, list the previously mentioned qualities in their examination of the criteria for good contributions.

A contribution should be relevant to the group's task and personal needs If the contribution is to be used, someone must sooner or later relate it to other contributions. If the maker of the contribution cannot relate it himself, he should at least ask someone else for help This criterion well-timed is especially difficult to meet because the idea may not occur to the discussant at the appropriate time, or because he may not be able to get the floor when it is timely, or both

The important thing is to keep all parts of the contributions related to one main point.¹

Another example of such statements is incorporated in suggestions for improving participation in discussion by David Potter and Martin P. Andersen in Discussion: A Guide to Effective Practice.

¹R. Victor Harnack and Thorrel B. Fest, Group Discussion: Theory and Technique, (New York: Appleton-Century-Crofts, 1964), pp. 401-5, 431-4.

They suggest that effective participation involves making relevant and well-timed contributions. Their suggestions are: Strike while the iron is hot. Don't wait to speak until you are called on. You may forget your point or miss the best time to present it Remember, if you wait too long, the point may be lost Stay on the beam. Since digressions usually hinder progress, keep your remarks relevant. Show how your points are related to the discussion. Don't repeat what has already been covered²

Ernest G. Bormann in Discussion and Group Methods: Theory and Practice makes further assumptions concerning the necessity of quality contributions. In summarizing the characteristics of a good participant, Bormann stresses the importance of a relevant contribution developing a single point. "A good participant contributes to the program with his full ability. His comments are short and to the point. He gears his contributions exactly to the topic and develops only one point at a time."³ A final example of such statements is provided by Halbert E. Gulley, who suggests in Discussion, Conference, and Group Process that participants can contribute to productivity in several ways:

The individual participant must try to make his own contributions to the group effort and at the same time follow closely what others are saying and what the designated leader is doing Each participant is responsible for understanding the question,

²David Potter and Martin P. Andersen, Discussion: A Guide to Effective Practice, (California: Wadsworth Publishing Company, Inc., 1963), p. 61.

³Ernest G. Bormann, Discussion and Group Methods: Theory and Practice, (New York: Harper and Row, Publishers, 1969). p. 53.

asking for clarification or definitions if necessary, supplying whatever relevant responses he can, and helping the group stay with it until it is answered fully and directly . . . facts must be supplied at the moment the group needs them Facts are maximally helpful only when they are relevant to the group's discussion at a particular moment . . . the progress will be smoother and productivity higher if information is made available at the appropriate time.⁴

Gulley supports his assumptions concerning contributions with data from experimental and field studies reviewed by Collins and Guetzkow.⁵ The evidence from these studies suggests that members derive satisfaction from successful completion of the assigned task in decision-making discussion. Therefore, Gulley contends, "If participants can contribute to efficient achievement of the group's task they will increase member satisfaction and thus be viewed as helpful to the group."⁶ Maintaining that members of a group will be satisfied if they complete the task, Gulley suggests the previously mentioned ways in which members could assist group productivity.

Although there are no studies which specifically support these assertions concerning the effect of contributions on group productivity, many experimental studies have focused on other specific factors related to productivity. For example, Keltner found in his investigation that when group members explore the nature of the problem situation, attempt to identify

⁴Halbert E. Gulley, Discussion, Conference and Group Process, 2nd ed., (Holt, Rinehart and Winston, Inc., 1968), pp. 157-8.

⁵Barry E. Collins and Harol Guetzkow, A Social Psychology of Group Processes for Decision-Making, (New York: John Wiley & Sons, 1954), pp. 196-9.

⁶Halbert E. Gulley, Discussion, Conference and Group Process, 2nd ed., (Holt, Rinehart and Winston, Inc., 1968), p. 157.

specific goals for the group, and identify particular status in relationship to these obstacles and goals, then the group's deliberations are more effective.⁷ Several other studies have examined the relationship between communication patterns and discussion outcomes.⁸ Although these studies yield much valuable information concerning factors related to productivity, there still remains a lack of investigation concerning productivity's relationship to contribution quality. However, some studies have examined contribution quality in relation to other variables.

One study concerning the effect of the quality of communication within the small group was conducted by Dale G. Leathers.⁹ In his experiment, he observed the disruptive effects of five types of contributions: high-level abstraction, low-level abstraction, unequivocal personal commitment, implicit inference and facetious interpolation. He hypothesized that each type of contribution would produce measurably different effects on the communication that followed its introduction into a problem-solving discussion. The different feedback responses confirmed his hypothesis. This study is one of the few dealing with the quality of contributions.

⁷John W. Keltner, "Goals, Obstacles, and Problem Formulation in Group Discussion," Quarterly Journal of Speech, 33 (1947), pp. 468-473.

⁸John K. Brilhart, and Lurene M. Jochem, "Effects of Different Patterns on Outcomes of Problem-Solving Discussion," Journal of Applied Psychology, 48 (1964), pp. 175-179; Ovid L. Bayless, "An Alternate Pattern for Problem-Solving Discussion," Journal of Communication, 17 (1967), pp. 188-197; and, Carl Larson, "Forms of Analysis and Small Group Problem-Solving," Speech Monographs, 36 (1969), pp. 452-455.

⁹Dale G. Leathers, "Process Disruption and Measurement in Small Group Communication," Quarterly Journal of Speech, 55 (1969), pp. 287-300.

Thus, statements made in group communication textbooks and findings in previous research suggest the importance of contribution quality to small group discussion. If contribution quality is important, it seems reasonable to suggest that there should be a relationship between the quality of contributions and group productivity. Furthermore, it seems logical that the quality of an individual's contributions should affect his ethos. To investigate the validity of these suggestions, the following hypotheses were formulated:

- (1) The quality of contributions to a small group discussion affects qualitative and quantitative group productivity.
- (2) The perceived ethos of an individual by other members in the group will be affected by the quality of his contributions.

The quality of contributions was operationally defined in terms the following characteristics: relevant, related, well-timed, and avoiding multiple points. A contribution was considered relevant if it was directed to some significant group task. Relevancy was determined on the basis of whether or not the contribution was specifically concerned with the topic the group was considering when the contribution was made. A contribution was considered related if it was relative to what preceded and what was likely to follow. A well-timed contribution was one that provided information needed by the group at the moment the contribution was made. To avoid multiple points, the discussant was supposed to make only one

point at a time. For the purposes of this study, variations in the quality of the contributions included irrelevant contributions, unrelated contributions, poorly-timed contributions, and contributions involving multiple points. These were manipulated by a confederate introduced into a discussion.

Quantitative group productivity was determined on the basis of the number of solutions generated by the group in the specified time period. Qualitative group productivity included the dimensions of quality and acceptability. The quality of the group product was determined by a panel of three experts in group discussion using a modification of the Q-sort technique. Acceptability was determined on the basis of the degree to which the discussants were satisfied with and agreed with the solutions generated by the group.

The independent variable in the study was the quality of contributions. Quality was manipulated in such a way that each of the following characteristics was represented: irrelevance, unrelatedness, poor-timing, and multiple points. The dependent variables included quantitative and qualitative group productivity and ethos as measured on a semantic differential-type scale.

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CHAPTER 2

PROCEDURE CHAPTER

In setting up the experimental conditions to test the two hypotheses, it was necessary to train eight confederates to manipulate the four characteristics of poor quality contributions, and five observers to categorize the contributions made in the discussion groups. After the training session, it was necessary to train two additional substitute observers and three confederates.

Each of the four variations in the quality of the contributions, including irrelevant contributions, unrelated contributions, poorly timed contributions and contributions involving multiple points, was initially represented by two trained confederates. The confederates were undergraduate students selected on the basis of two criteria: their knowledge and background in speech and their appearance which enabled them to be accepted as Oral Communication students by the other subjects. The confederates were instructed to conceal their identity as a confederate from the subjects and the observers. The experimenter gave each confederate written instructions containing operational definitions appropriate for his respective experimental condition. The confederates were allowed to ask questions and discuss their part in the study until they had a good understanding of the condition they were to represent. This constituted the initial training period.

The five observers were graduate and undergraduate students with extensive training in General Speech. The role of the observer was to keep a running record of all contributions made in the discussion, thereby providing a check on whether the confederate adequately manipulated his variation of a poor quality contribution. The observer was not aware of the experimental condition represented by the group he was observing, nor was he informed of the identity of the confederate. The observers were given instructions containing operational definitions of the characteristics to be represented by the confederates. The definitions were discussed and any questions that the observers had were answered.

To complete the training each confederate was then assigned to a group and was involved in a problem-solving discussion with four subjects. Everything in the training session was identical to the planned testing situation. The discussion was tape recorded, and an observer kept a running record of contributions made by each participant. Following the session, the observer's sheet was checked to determine whether or not the confederate effectively manipulated the assigned characteristic. If the confederate appeared to have failed to make the appropriate contributions, the experimenter carefully listened to the tape to determine where the problem was. If the fault was with the confederate, the experimenter attempted to correct the situation by discussion and examples of the characteristic contributions. If the difficulty was found to be with the observer's ability to correctly categorize the contributions, the categories were clarified for the observer.

The subjects for the study were students enrolled in Oral Communication I and IA sections at Kansas State University. Teachers of these classes were asked whether they would be willing to provide the needed volunteers by giving extra credit for participation. They then requested volunteers from their respective classes. The one-hundred volunteers were assigned to a specific session and were instructed to read preliminary material before coming to the testing session. It was assumed that the subjects would have varying degrees of knowledge and experience in the area of group discussion. Therefore, to provide a basic knowledge common to all, the subjects were requested to read the chapter on group discussion in the textbook used in Oral Communication classes.¹ The subjects were not informed about the specific purpose of the study, but were merely told that they would be participating in an experimental study of group communication.

The discussion groups consisted of five members. The five-man group was used in the study because it has been found to be the optimum size in previous research.² The experimental groups contained four subjects and one confederate, and the control group contained five subjects. To control the influence of friends as an interacting variable, four subjects (five subjects in the control group) were randomly assigned to a

¹Rudolph F. Verderber, "Group Discussion," The Challenge of Effective Speaking, (California: Wadsworth Publishing Company, 1970), pp. 205-224.

²Paul A. Hare, ed., Handbook of Small Group Research, (New York: The Free Press, 1962), p. 243.

group, each student being from a different Oral Communication section. Sex, as an interacting variable, was controlled when possible by assigning two male subjects and two female subjects to each group, in addition to the confederate who was randomly assigned to the group. No leadership roles were assigned in the groups, leaving the leadership functions to an emerging leader.

One control group and four experimental groups were scheduled on each of four consecutive evenings. Failure on the part of subjects, confederates, and observers to arrive on time made it necessary to run two experimental groups (in which irrelevancy and multiple points were manipulated) and one control group two weeks after the initial four-day testing period. Each group was assigned to a separate room. Each room was arranged and all participants assigned to that room were present before anyone was allowed to enter. The observers were randomly assigned to the rooms, and the conditions they observed varied nightly. The observer read the following instructions to the subjects and began the tape recorder when the group was ready for the discussion:

You are participating in an experimental study of group communication. To insure reliability in the study, do not disclose any information concerning what takes place in this session.

You will be participating in a 25-minute group discussion. You are all to read the task sheet and through discussion arrive at as many good solutions to the problem as possible. The group will be rated on the quantity as well as the quality of the solutions. Please have a member of the group record your solutions on the paper provided. Also, on the basis of quality, please order the solutions numerically. Any questions?

When you have finished reading the task you will have twenty-five minutes for discussion. Please speak up so the microphone will pick up your voices. You may begin.

After reading the task sheet, the group was given twenty-five minutes to generate as many good solutions to the problem as possible in the time allowed and to order the solutions numerically on the basis of quality. The numerical ordering of the solutions served no other purpose than to stress the importance of generating quality solutions. The group discussion task follows:

The University Library has been plagued with books and magazines being mutilated, articles cut out, pages ripped away, and materials being stolen. What might be done to alleviate this problem?

The task used in the study had been used in two previous studies in which creative problem solving was involved.³ The groups were told that the group would be judged on the quantity as well as the quality of the solutions generated. The group was responsible for selecting a member to record the solutions.

On each night of testing, each of the four variations in the quality of contributions was scheduled to be represented by one discussion group. The confederates assigned to the groups were instructed to make a total of thirteen contributions during the discussion period since a preliminary investigation with the task used in the study revealed that thirteen contributions

³John K. Brillhart, "An Experimental Comparison of Three Techniques For Communicating a Problem-Solving Pattern to Members of a Discussion Group," Speech Monographs, 31 (1966), p. 168-177; and D. W. Taylor, P. C. Berry, and C. H. Block, "Does Group Participation When Using Brainstorming Facilitate or Inhibit Creative Thinking?" Administrative Science Quarterly, III (1958), 23-47.

was the average made by each participant in a twenty-five minute period. The individual confederate's contributions were all to represent the particular characteristic to which he was assigned.

During the discussion, the observer kept a running record of all contributions made. The observer's form for keeping a running record of contribution quality was a modification of the form presented by Halbert E. Gulley in Discussion, Conference, and Group Process.⁴ Simple contributions such as "Yes, I agree," and "No," were not categorized. The categories were separated into two parts: good contributions and poor quality contributions. The good contribution categories included: asked a pertinent question, provided information needed by the group, relevant contribution, related contribution and an "other" category to include all other good contributions. The poor contribution categories included: provided information not needed by the group, irrelevant contribution, unrelated contribution, contributions involving multiple points, and an "other" category to include all other poor quality contributions.⁵ Following the discussion, the observer wrote a brief description of what happened in the group in terms of leadership.

When the discussion period was over, the observer distributed questionnaire packets to all participants.⁶ The questionnaires included effectiveness rating scales on each

⁴Halbert E. Gulley, Discussion, Conference and Group Process, 2nd ed., (Holt, Rinehart and Winston, Inc., 1968), p. 308.

⁵A sample of the observers' form for keeping a running record of contribution quality is included in Appendix D.

⁶A sample questionnaire is included in Appendix C.

participant, ethos scales on each participant, and a scale to determine the participants' attitudes toward the solutions generated by the group. The effectiveness scales to be marked by the subjects included the following six criteria: attitudes, substantive contributions, language usage, speaking, helpfulness to group and ethical conduct. The forms for the effectiveness scale and the attitude toward solution scales are modifications of similar forms presented by Halbert E. Gulley in Discussion, Conference, and Group Process.⁷ The ethos scales were five semantic differential scales (expert-inexpert, valuable-worthless, qualified-unqualified, reliable-unreliable, informed-uninformed) interspersed among five other scales used as blinding.⁸ Finally, the semantic differential scales used to determine attitudes toward solutions included satisfied-dissatisfied and agree-disagree.

⁷Halbert E. Gulley, Discussion, Conference and Group Process, 2nd ed., (Holt, Rinehart and Winston, Inc., 1968), pp. 302-311.

⁸The ethos scales used in the study were taken from those developed by James C. McCroskey, "Scales For the Measurement of Ethos," Speech Monographs, 33 (1966), pp. 65-72.

CHAPTER 3

RESULTS

Before the data could be analyzed, it was necessary to determine whether the independent variable was successfully manipulated, that is whether the confederates made the kinds of poor quality contributions that they had been assigned to represent. Successful manipulation was based on the number of appropriate contributions the confederates made to the group. If a condition was to be considered successfully manipulated, seven of the confederate's thirteen contributions had to be recorded by the observer in the appropriate column on his tally sheet. On the basis of this criterion, poorly-timed contributions were eliminated because the condition was found impossible to manipulate. At the end of the training period, the following number of confederates met the criteria for the remaining three conditions: manipulating the unrelated variation of a poor quality contribution, two males participated in two groups each; manipulating irrelevant contributions were two males and one female; and, manipulating multiple points, one male and one female participated in two groups each. The results which follow, then, are based upon twenty groups, sixteen in which poor quality contributions were manipulated, and four control groups. Incidentally, there was no indication that the confederates were identified by the subjects as being

part of the experiment. In fact, informal questioning of several subjects suggests that there was no suspicion concerning the confederates.

To analyze differences in the quality of solutions generated, a modification of the Q-sort technique was used. A panel of experts composed of three faculty members who have taught group discussion at Kansas State University was asked to judge the quality of the solutions arrived at by the groups.¹ Each solution was typed on a 3" x 5" card, and each expert was instructed to sort the seventy-three (73) solution cards into seven different piles with very poor solutions at one end and the very good solutions at the other. Ten cards were to be placed in each pile, except the center pile into which thirteen cards were to be placed. The experts were instructed to sort the solution cards on the basis of quality considering the following five criteria:²

Effectiveness -- degree to which the ideas which are part of the solution help the group achieve the objective of developing a realistic solution.

Feasibility -- degree to which solution reflects a picture of social reality which is consistent with relevant public attitudes.

¹The panel of experts included Dr. William Burke, Mr. Vernon Barnes, and Miss Martha Atkins who devoted their time to judge the quality of solutions.

²Dale G. Leathers, "Quality of Group Communication as a Determinant of Group Product," Speech Monographs, 39 (1972), pp. 166-173.

Creativity -- degree to which the solution reflects markedly original ideas not previously applied to the problem under discussion.

Significance -- degree to which the solution is based on relevant and significant information.

Comprehensiveness -- degree to which the group's solution reflects a response to all the dimensions of the problem under consideration.

Upon completion of the sorting, each solution was scored on the basis of the pile into which it was placed. Scores ranged from one in the very poor pile to seven in the very good pile. The three expert's scores were totaled to give a score for each solution. The ten solutions with the highest scores and the ten solutions with the lowest scores were intended to be used in the final analysis of qualitative differences, but ties made it necessary to use the highest twelve and the lowest eleven scores.

The number of good solutions generated by the groups and the number of poor solutions generated by the groups were then recorded for each experimental condition. These totals are reported in Table 1. A chi-square test was used to determine whether good and poor solutions were equally distributed among the conditions. The chi-square of 1.818 was not significant, and it can be concluded that there were no significant differences in the number of poor quality and good quality solutions among the conditions when this method of scoring was used.

TABLE 1. Total Number of Poor Quality and Good Quality Solutions For each Experimental Condition.

Solution Quality	Experimental Conditions			
	Unrelated	Irrelevant	Multiple Points	Control
Poor	3	3	1	5
Good	8	9	6	7

$$\chi^2 = 1.818$$

However, lack of reliability between the expert's scores could account for lack of significant differences between the conditions in terms of the quality of solutions generated. The Pearson Product Moment Correlation was used to test the reliability between the three expert's ratings for the solutions. The results are reported in Table 2. The correlation between raters 1 and 3 was the only one which was significantly different from zero ($p < .05$), and even that correlation was extremely low as a measure of reliability. In view of these results, a more reliable method of determining solution quality should be developed.

TABLE 2. Correlation Coefficients Matrix Between Experts' Scores

Experts	Correlation		
1	1.00000		
2	0.17628	1.00000	
3	0.30549	0.11824	1.00000
Experts	1	2	3

The next dimension of qualitative productivity to be tested was acceptability of the solutions to members of the groups. To determine acceptability, two semantic differential-type scales, satisfied-dissatisfied and agree-disagree, were included in the subjects' questionnaire packets. Using the subjects' scores only, (i.e. excluding confederates' scores) a mean score was calculated for each condition on each scale. Differences in acceptability among the conditions were tested using an analysis of variance. The results are reported for each scale in Tables 3 and 4.

TABLE 3. Analysis of Variance, Satisfied-Dissatisfied Scale

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Sq.	F
Between-groups	3.32	3	1.11	.79
Within-groups	89.00	63	1.41	
Total	92.32	66		

TABLE 4. Analysis of Variance, Agree-Disagree Scale

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Sq.	F
Between-groups	5.23	3	1.74	1.57
Within-groups	70.00	63	1.11	
Total	75.23	66		

The tables indicate that differences on both scales among conditions were not significant. The first hypothesis that contribution quality affects qualitative productivity is not significant on either dimension, quality or acceptability.

To determine quantitative differences in group productivity, the total number of solutions generated was calculated for each experimental condition and the control condition. Table 5 shows the total number of solutions for each condition.

TABLE 5. Number of Solutions for Each Group in Each Condition

Experimental Condition	Number of Solutions for Each Group	Total Number Solutions for Condition
Unrelated	6	37
	6	
	14	
	11	
Irrelevant	12	38
	16	
	2	
	8	
Multiple Points	7	24
	6	
	5	
	6	
Control	12	49
	11	
	11	
	15	

$$\chi^2 = 8.487$$

A chi-square test was used to test the null hypothesis that each condition generated the same number of solutions. The test revealed a chi-square of 8.487, which indicated a significant difference ($p < .05$) among the conditions. Further chi-square tests were run between all possible pairs of conditions. The only significant difference was between the number of solutions

generated by the control condition and the number generated by the multiple point condition. The results may be summarized as follows:

Differences between:	χ^2	
Multiple Points-Control	8.560	significant ($p < .005$)
Unrelated-Irrelevant	.012	not significant
Irrelevant-Control	1.390	not significant
Unrelated-Control	1.674	not significant
Irrelevant-Multiple Points	3.160	not significant
Unrelated-Multiple Points	2.770	not significant

The data for the multiple points condition, then, partially confirms the first hypothesis that the quality of contributions affects quantitative productivity, in that the groups representing multiple points generated significantly fewer solutions than the control group.

To test the second hypothesis, that the perceived ethos of an individual by other members in the group will be affected by the quality of his contribution, the ratings given confederates on the effectiveness rating scale and the ethos scales were compared to the ratings given other subjects. Using only the subjects' questionnaires, a mean score was calculated for the confederate and for each subject in each group on each scale. The scores for the four groups representing each condition were then combined and the differences between confederate

and subject scores were tested using the Mann-Whitney U-test.³ Tables 6 and 7 indicate on which scales each condition showed significantly lower confederate scores in relation to the subjects' scores.

TABLE 6. Significance Levels for the Different Experimental Conditions on the Effectiveness Rating Scale

Rating Scale	Experimental Conditions		
	Unrelated	Irrelevant	Multiple Points
Attitudes	.01	.05	n.s.
Substantive Contributions	.01	n.s.	n.s.
Language Usage	n.s.	n.s.	n.s.
Speaking	n.s.	n.s.	n.s.
Helpfulness to Group	.01	n.s.	n.s.
Ethical Conduct	n.s.	n.s.	n.s.

³Tables 8 and 9 in Appendix F show the rank of confederate scores in relation to subject scores on the effectiveness rating scale and the ethos scales, as used in the Mann-Whitney U-Test for calculating differences.

TABLE 7. Significance Levels for the Different Experimental Conditions on the Ethos Scales

Ethos Scales	Experimental Conditions		
	Unrelated	Irrelevant	Multiple Points
Expert-Inexpert	.05	n.s.	n.s.
Valuable-Worthless	.01	.05	n.s.
Qualified-Unqualified	n.s.	n.s.	n.s.
Reliable-Unreliable	.05	n.s.	n.s.
Informed-Uninformed	.01	n.s.	n.s.

The tables show significant differences on both the effectiveness scales and ethos scales for the confederates representing unrelated contributions. The criteria on the effectiveness scale showing significant differences include attitudes, substantive contributions, and helpfulness to group. Significant differences did not appear on the other criteria. On the ethos scales, the "unrelated" confederates were perceived as being more inexpert, worthless, unreliable, and uninformed than other group members. "Irrelevant" confederates were rated significantly lower than other subjects only on the attitude criteria of the effectiveness scale. Significant differences in ethos appeared only on the valuable-worthless scale. "Multiple point" confederates were not rated significantly lower than other subjects on any criteria on either scale. Thus, these results partially confirm the second hypothesis.

CHAPTER 4

CONCLUSIONS

These experimental results suggest that the assumptions made by many authors of group communication textbooks concerning the importance of contribution quality may not be wholly accurate. In examining the data on the effect of the quality of contributions on qualitative and quantitative group productivity, the following conclusions may be drawn.

Experimental findings partially support the first hypothesis that contribution quality affects qualitative and quantitative group productivity. There appeared to be no significant differences in terms of quality between the experimental conditions and the control condition on either the quality or acceptability dimension. Lack of significant differences in the quality of solutions generated by the groups could be attributed to the method used in determining the quality. Some of the problems encountered in using this Q-sort method were extreme differences between the experts' ratings (in some instances a solution was ranked in the highest category by one expert and in the lowest category by another), conflicting criteria for judging the quality of the solutions (while a solution may have been very creative, it may not have been feasible), and use of only a small proportion of the solutions in the final analysis (perhaps a better method could

have incorporated all the solutions generated by each experimental condition into a total score for quality). There was also a lack of significant differences between the groups on the second dimension of quality, acceptability of the group's solutions to the members of the group. Generally, it can be concluded that the quality of solutions generated is not affected by poor quality contributions in small group discussion.

Quantitative productivity was found to be affected by the quality of contributions. The number of solutions generated by the multiple point groups was significantly less than the number generated by the control groups. From the design of the study it cannot be determined why this is so, but it can be speculated that multiple point contributions affect quantitative productivity because a group can handle only one point at a time and is forced to ignore other points. By the time a group is able to adequately cover a point, additional points are introduced into the discussion. The amount of time taken by the confederate to contribute several points also deprives the group of sufficient time to handle the task. The other experimental conditions revealed no significant results in terms of quantitative productivity. There was, however, a tendency for the irrelevant and unrelated groups to generate substantially fewer solutions than the control group. Therefore, it can be concluded that the quality of contributions has an effect on quantitative productivity.

The experimental data partially confirm the second hypothesis that the quality of contributions affects the perceived ethos of an individual by other members of the group.

The confederates representing the irrelevant and unrelated variations of a poor quality contribution were ranked significantly lower than the subjects on several scales of both the effectiveness rating scale and the ethos scale. Of the two conditions, the unrelated condition resulted in a greater number of scales with significantly lower scores. This supports the hypothesized relationship between the quality of contributions and perception of ethos. In the data reported, the irrelevant confederates were ranked lower on one rating scale and one ethos scale. Lack of significance on other scales for this condition could be due to confederate personality factors which were not accounted for in the design of the study. Two confederates were ranked extremely low, but the scores for the other confederate were too high to make overall differences for the irrelevant condition statistically significant. A stronger design would have rotated each confederate through each of the experimental conditions. Personality as an interacting variable would have been accounted for if each condition had been represented by each confederate. The confederates representing multiple points were not ranked significantly lower than other subjects, perhaps because they contributed much to the groups and were described by the observers as taking over the leadership.

In summary, it can be concluded that while the quality of contributions does not affect qualitative productivity, quantitative productivity is affected. In addition, an individual's ethos is affected by the quality of his contributions.

And, it appears that unrelated contributions have a markedly greater effect on ethos than multiple point contributions. Furthermore, the study indicates that different poor quality contributions may have differing effects on discussion, whereas group communication textbooks make a broad generalization and group all contributions together. In light of these conclusions, the accuracy of the assumptions made in textbooks on group discussion concerning the effect of contribution quality are questionable when using group productivity as a measurement of this effect. However, before these assumptions are completely disregarded, other factors should be studied in relation to contribution quality..

Future research in this area could focus on the effect in relation to communication flow. What happens when a participant makes an irrelevant or unrelated contribution? Is the communication flow interrupted? Do other participants begin to make irrelevant or unrelated comments, or do they ignore the contribution? It would be valuable to determine what specifically happens within a group when a poor quality contribution is made. Focusing on measurement of leadership in relation to the quality of contributions might yield information on why certain groups are more productive than others. Is the leader capable of providing direction in spite of poor quality contributions? Is a group with a greater amount of leadership more productive? Also in the area of leadership, further research in determining differences in productivity between groups with an assigned leader and groups with an emerging leader might be of value.

Expanding on the present study, more research should be done to investigate why quantitative productivity is affected while qualitative productivity is not. Is it time wasted because of interruptions caused by poor quality contributions that causes groups to generate fewer solutions? Would an assigned leader help to eliminate the differences in quantitative and qualitative productivity? Further study should also be done on the multiple point variation of a poor quality contribution. That condition generated significantly fewer solutions, and yet the confederate offered a great number of solutions in the multiple point contributions. Could the result be that the group can handle only one point at a time and some of the points are ignored? Does the time taken up by the confederate deprive the group of time to adequately handle the problem? Such questions should be the focus of future research in the area of the effect of contribution quality in the small group discussion. The results of the study indicate that it is possible to manipulate the quality of contributions using a confederate. Refining operational definitions and providing more extensive confederate training in the design of this study would provide an efficient way to study the effect of contribution quality in future research.

APPENDIX

ILLEGIBLE DOCUMENT

**THE FOLLOWING
DOCUMENT(S) IS OF
POOR LEGIBILITY IN
THE ORIGINAL**

**THIS IS THE BEST
COPY AVAILABLE**

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH THE ORIGINAL
PRINTING BEING
SKEWED
DIFFERENTLY FROM
THE TOP OF THE
PAGE TO THE
BOTTOM.**

**THIS IS AS RECEIVED
FROM THE
CUSTOMER.**

APPENDIX A

Instructions Read to Subjects

INSTRUCTIONS

(To be read to the subjects)

You are participating in an experimental study of group communication. To insure reliability in the study, do not disclose any information concerning what takes place in this session.

You will be participating in a 25-minute group discussion. You are all to read the task sheet and through discussion arrive at as many good solutions to the problem as possible. The group will be rated on the quantity as well as the quality of the solutions. Please have a member of the group record your solutions on the paper provided. Also, on the basis of quality, please order the solutions numerically. Any questions?

When you have finished reading the task you will have twenty-five (25) minutes for discussion. Please speak up so the microphone will pick up your voices. Thank you very much.

(Start the tape recorder when the group is ready. The discussion should be timed for 25 minutes. When there are five minutes remaining, signal with the appropriate time card. Do the same when two minutes are remaining, one minute, and when the time is up.)

Please stop. In the packets being distributed you will find several questionnaires. Please fill them out as indicated. Each of you should fill in the names of every other member of the group in the spaces provided, beginning with the participant on your left. Please list the names on both scales in the same order. When you complete the forms, return them to me and you may go. Any questions?

Thank you. Remember, to insure reliability, do not disclose any information concerning what took place in this session.

**THIS BOOK
CONTAINS
NUMEROUS PAGES
THAT HAVE INK
SPLOTCHES IN THE
MIDDLE OF THE
TEXT. THIS IS AS
RECEIVED FROM
CUSTOMER.**

**THESE ARE THE
BEST IMAGES
AVAILABLE.**

APPENDIX B

Task Sheet

TASK SHEET

Please read the following carefully:

The University Library has been plagued with books and magazines being mutilated, articles cut out, pages ripped away, and materials being stolen. What might be done to alleviate this problem?

Through discussion, you are to arrive at as many good solutions to the problem as possible. The group will be rated on the quantity as well as the quality of the solutions. Please have a member of the group record your solutions on the paper provided. Also, please order the solutions on the basis of quality.

APPENDIX C

Questionnaire

INSTRUCTIONS

Please rate each participant in each of the six areas on the rating sheet. Place the appropriate number in the correct box beneath the participant's name. Please rate the participants according to the following scale:

- 5 - Superior
- 4 - Above Average
- 3 - Average
- 2 - Below Average
- 1 - Poor

RATING SCALE

PARTICIPANTS:

ATTITUDE:
objectivity;
contribution to
groupness

SUBSTITUTIVE CONTRIBUTIONS:

REASONING ABILITY;
CONTRIBUTING WHEN
HEARD; THOROUGHNESS

ANSWER USE:

CONFIDENCE, ACCURACY,
APPROPRIATENESS

SPECKING

INTUITION;
NATURALNESS; EFFICIENCY;
INTERESTINGNESS

HELPFULNESS TO GROUP:

HELPING OTHERS STAY
ON TRACK,
COOPERATIVENESS

ETHICAL CONDUCT:

REFRAINING FROM
EXAGGERATION,
DISTORTION, DECEPTION

INSTRUCTIONS

On each of the next two pages you will find participants to be rated and beneath each name a set of scales. Please rate the participants on the basis of your impression. Use the various spaces on the scale as follows. An (X) at one end of the scale means "extremely." For example, if you believe that the participant being rated is extremely large, mark the scale in this manner:

large: X : : : : : : :small

An (X) in the second position from the end means "quite." An (X) in the third position from either end means "slightly." An (X) in the middle position means "undecided," "neutral," or that the scale does not apply to the participant being rated.

Please place all (X)'s in the middle of the spaces, not on the dividers. Only one (X) should be marked for each scale. Please answer every scale. Work at a fairly high speed. Do not worry or puzzle over individual items. It is your first impressions that we want. On the other hand, please do not be careless, because we want your true impression.

Participant _____

expert: _____:inexpert
unpleasant: _____:pleasant
valuable: _____:worthless
dishonest: _____:honest
unqualified: _____:qualified
unselfish: _____:selfish
unreliable: _____:reliable
unintelligent: _____:intelligent
informed: _____:uninformed
unfriendly: _____:friendly

Participant _____

expert: _____:inexpert
unpleasant: _____:pleasant
valuable: _____:worthless
dishonest: _____:honest
unqualified: _____:qualified
unselfish: _____:selfish
unreliable: _____:reliable
unintelligent: _____:intelligent
informed: _____:uninformed
unfriendly: _____:friendly

INSTRUCTIONS

Using the same rating method as used on the previous scales, indicate your attitude toward the solutions reached by the group.

ATTITUDE TOWARD SOLUTIONS

dissatisfied: _____ : _____ : _____ : _____ : _____ : _____ : satisfied

agree: _____: _____: _____: _____: _____: _____: _____: disagree

APPENDIX D

Observers' Instructions and Form for Recording Contribution Quality

Observer: _____ 6:45 p.m.

Monday, March 5 _____
Tuesday, March 6 _____
Wednesday, March 7 _____
Thursday, March 8 _____

INSTRUCTIONS

You will meet the subjects outside the assigned room. There should be five students. Wait for all participants to arrive before entering the room.

The room will be completely arranged. The students should seat themselves at the desks with their corresponding name plates. There will be a seat near the tape recorder where you may seat yourself. Read the instructions to the students. When they are ready, merely turn on the recorder. During the discussion, keep a running record of the contributions. Classify each contribution in one of the categories on the form provided. There are two parts to the form: Part I is for good contributions and Part II is for poor quality contributions. If a contribution cannot be classified into one of the categories, record it in the appropriate "other" column. Determine the category on the basis of the following definitions.

Relevancy is determined on the basis of whether or not the contribution was specifically concerned with the topic the group was considering when the contribution was made.

A contribution is considered related if it is related to what has preceded and what is likely to follow.

(Irrelevant and unrelated contributions are to be determined on the basis of the above definitions.)

A contribution involving multiple points is a contribution which contains, for example, a point concerning the problem, a point concerning a solution presented by another participant, and a point in which the contributor offers another solution. Multiple reasons behind a single point is not included in this category.

Time the discussion. It is to be 25 minutes in length. When there are 5 minutes remaining, hold up the appropriate time card. Do the same when there are 2 minutes remaining, one minute, and when the discussion is over.

Continue to read the instructions after the discussion. Pass out the questionnaires to the appropriate participants. All materials should be readily available and clearly marked. Collect all the materials when the subjects are finished and leave them next to the recorder. Contact me when the group is finished.

Supplementary instructions to observers:

The questionnaires will not have the names of participants provided on the appropriate spaces. Please instruct the participants to fill in the names of each other person in the group, beginning with the person on their left. They are to list the names on both scales in the same order.

There will be an additional sheet for the observers to complete concerning leadership in the group. Just note this briefly.

RUNNING RECORD OF CONTRIBUTION QUALITY

I.	ASKED PERTINENT QUESTION						
	PROVIDED INFORMATION NEEDED BY GROUP						
	RELEVANT CONTRIBUTION						
	RELATED CONTRIBUTION						
II.	PROVIDED INFORMATION NOT NEEDED BY GROUP						
	IRRELEVANT CONTRIBUTION						
	UNRELATED CONTRIBUTION						
	CONTRIBUTION INVOLVING MULTIPLE POINTS						

APPENDIX E

Experts' Instructions

The cards you are to sort contain solutions derived by group discussion. The task given to the groups is as follows:

The University Library has been plagued with books and magazines being mutilated, articles cut out, pages ripped away, and materials being stolen. What might be done to alleviate this problem?

You are to sort the cards into seven piles with the following number of cards in each pile.

	10	10	10	13	10	10	10	
very good								very poor

The sorting should be done on the basis of the quality of the solutions. The following criteria should be considered in determining the quality of the solutions:

Effectiveness -- degree to which the ideas which are part of the solution help the group achieve the objective of developing a realistic solution.

Feasibility -- degree to which solution reflects a picture of social reality which is consistent with relevant public attitudes.

Creativity -- degree to which the solution reflects markedly original ideas not previously applied to the problem under discussion.

Significance -- degree to which the solution is based on relevant and significant information.

Comprehensiveness -- degree to which the group's solution reflects a response to all the dimensions of the problem under consideration.

If the criteria seem to contradict, use your judgment in determining which is of greater importance.

APPENDIX F

Tables 8 and 9, Rank of Confederate Scores

The following tables show the rank of confederate scores in relation to subject scores on the effectiveness rating scale and the ethos scales, as used in the Mann-Whitney U-Test for calculating differences. There were a total of twenty scores to be ranked, making twenty (20) the lowest rank.

TABLE 8. Rank of Confederate Scores on the Effectiveness Rating Scale

Experimental Condition	Rating Scale ^a					
	I	II	III	IV	V	VI
Unrelated	15	16.5	9	11	14	6.5
	17	16.5	13.5	11	18.5	11
	18.5	19	13.5	15	18.5	15
	20	20	19	18	20	19
Irrelevant	9	3	2	2.5	6	2
	11	12	5	2.5	9.5	15.5
	17	18.5	18	18	18.5	15.5
	20	20	20	20	20	20
Multiple Points	1	4	7.5	3	3	1
	4.5	8.5	10.5	8.5	9.5	16
	4.5	8.5	10.5	8.5	13	18
	11.5	13	19	14	16	20

^aThe Criteria for the Rating Scale are as follows:

- I - Attitudes
- II - Substantive Contributions
- III - Language Usage
- IV - Speaking
- V - Helpfulness to Group
- VI - Ethical Conduct

TABLE 9. Rank of Confederate Scores on the Ethos Scales

Ethos Scales					
Experimental Conditions	Expert-	Valuable-	Qualified-	Reliable-	Informed-
	Inexpert	Worthless	Unqualified	Unreliable	Uninformed
Unrelated	9	12.5	10	5	15.5
	15.5	15	12.5	15	15.5
	15.5	19	16.5	19.5	17.5
	20	20	16.5	19.5	17.5
Irrelevant	5	7	3.5	2	2.5
	10	13	3.5	16	11
	15	18	17	17	19
	20	20	20	20	20
Multiple Points	2	4.5	1	2	2
	5	4.5	10	6.5	9.5
	12	7.5	15.5	16	9.5
	15	18	15.5	19	19

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THE EFFECT OF THE QUALITY OF CONTRIBUTIONS ON
QUALITATIVE AND QUANTITATIVE PRODUCTIVITY
IN SMALL GROUP DISCUSSION

by

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B. S., Kansas State University, 1972

AN ABSTRACT OF A MASTER'S THESIS

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1973

Group communication textbooks commonly make assumptions about the importance of good quality contributions to small group discussion. The purpose of this study was to test the validity of these assumptions in determining whether the quality of contributions affects qualitative and quantitative group productivity. In addition, the effect of contribution quality on an individual's ethos was examined.

Confederates were introduced into a small group discussion setting to manipulate the quality of contributions in terms of irrelevant contributions, unrelated contributions, poorly-timed contributions, and contributions involving multiple points. The effect of these different types of poor quality contributions on qualitative and quantitative productivity was analyzed. The confederates' ethos was also measured to determine if contribution quality affected it in any way.

The data revealed that there were no statistically significant differences in the quality of the solutions generated by the different experimental conditions. In terms of quantitative productivity, the multiple points groups generated significantly fewer solutions than the control groups. The hypothesized relationship between ethos and contribution quality was confirmed. Confederates manipulating irrelevant and unrelated contributions were rated significantly lower than other subjects.