DOCUMENT RESUME

ED 336 776 CS 507 563

AUTHOR Cragan, John F.; Wright, David W.
TITLE Replicating Small Group Research Using the Functional Theory.
PUB DATE 12 Apr 91
NOTE 18p.; Paper presented at the Annual Meeting of the Central States Communication Association (Chicago, IL, April 11-14, 1991).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Communication Research; *Decision Making; *Group Discussion; Higher Education; *Problem Solving; Speech Communication; Undergraduate Students
IDENTIFIERS *Small Group Communication

ABSTRACT

A replication study tested functional theory utilizing untrained full-fledged groups. One hundred forty undergraduate students who were enrolled in a small group communication course at a large midwestern university participated in small group discussions analyzing a plagiarism case used in an original study by R. Y. Hirokawa. Results indicated that not all of the functions identified by Hirokawa--understanding the problem, assessing requirements for an acceptable choice, assessing positive consequences, and assessing negative consequences of each alternative--were equally important in reaching a quality decision about a specific task. Results supported prior findings indicating that the fourth function was the key, in this case, to reaching a quality decision. This suggests that if the functional theory had been one that called for the group to select the most outstanding student, the study might have found that the second function of assessing the requirements for an acceptable choice might have proved to be the most valuable in arriving at a quality decision. Results also suggests that the functional theory of decision-making groups is only generalizable to group tasks that have a preferred solution. (Two tables of data are attached.) (PRA)

REPLICATING SMALL GROUP RESEARCH USING THE FUNCTIONAL THEORY

by

John F. Cragan
and
David W. Wright

Illinois State University

Presented at Central States Communication Association.
Chicago, Illinois April 12, 1991

REPLICATING SMALL GROUP RESEARCH USING THE FUNCTIONAL THEORY

A review of the 1970's critique of small group research indicated, among other things, that two separate lines of research had emerged. One richly described the process in small groups and the other attempted to assess group outcomes (Cragan and Wright, 1980). By the 1980's attempts were made to merge these two lines of research with the discussion line of research, thus developing a training-process-outcomes approach to small group decision-making (Cragan and Wright, 1990).

The development and grounding of a functional theory of small group decison-making has occurred through the writing and research of a number of scholars in the 1980's (See Hirokawa and Pace, 1983; Hirokawa, 1985; Gouran and Hirokawa, 1986; Hirokawa and Scheerhorn, 1986; and Hirokawa, 1988). Gouran and Hirokawa (1986) argued that their functional theory could explain the inconsistent findings of the effectiveness of various discussion agenda systems. They argued that certain key decision-making functions need to be performed if a group is to achieve a high quality decision.

To date, Hirokawa has focused attention on establishing the relationship between four decision-making functions and

high quality decisions. In two studies Hirokawa (1985, 1988) tested the importance of the four following functions: 1) understanding the problem 2) assessing requirements for an acceptable choice, 3) assessing positive consequences and 4) assessing negative consequences of each alterative. In the 1985 study Hirokawa joined 54 three member groups and randomly assigned them to four discussion format conditions (reflective thinking, ideal-solution, single-question, and free discussion) which had been derived from Larson (1969).

The groups were trained in the use of their assigned discussion format. A student plagiarism case served as the group task. He found regardless of which discussion format was used, groups who competently analyzed the problem and assessed the negative consequences produced significantly better decisions than those that did not. In the 1988 study Hirokawa utilized 42 zero-history groups, assigned them the same case that was used in the 1985 study, and requested that each group consider the four decision-making functions when arriving at the decisions. As in the 1985 study, judges were used to rate the quality of the group's decision, while trained coders rated the group's performance of each of the four decision-making functions. Hirokawa found empirical support for the functional theory in that groups that performed all four functions well produced higher quality decisions than these that did not. However, he found that taken individually only three of the four functions were significant: assessment of the problem,

assessment of the requirement for an acceptable choice, and assessment of negative qualities of alternative choices (1988, p. 498).

Purpose of The Study

In the building of any social science theory, replication must play an important role if the theory is to be truly grounded. In order to further establish the linkage between the four communication functions and the quality of decision-making , a study was designed to mirror the research procedures used in Hirokawa's 1988 study with one major change. Instead of utilizing three person zero history groups who had been trained in discussion procedures, untrained full-fledged groups were employed . The rationale for the importance of using full-fledged groups has been well-argued for decades by small groups scholars (Bales, and Strodbeck, 1951; Bormann, 1970; Cragan and Wright, 1980; and Poole 1983). The purpose of this study is to provide a further test of the functional theory utilizing full-fledged, untrained groups.

Method

The participants in this particular study consisted of 140 undergraduate students who were enrolled in a small group communication course at a large midwestern university. These students represented a wide variety of student academic majors. At the beginning of the course, they were randomly assigned to seven member groups. They remained in the same groups for the entire semester. The plagiarism

case that formed the basis for this study was the third task that the groups had performed, and they were aware that they would be performing two more tasks before the semester was over. In addition, the groups were told that the two best groups would receive a reward for high performance (large pizzas at a local pizzeria for the winning groups). The groups had intentionally not received any training in discussion formats or problem-solving techniques, but they had already named their groups and derived a group logo, as well as playing the "Desert Survival" game. For each of these tasks, the best group had received a reward. The groups were assigned the plagiarism case used in the 1988 Hirokawa study (p. 494). The twenty groups were allowed forty-five minutes to complete their task. In actuality, no groups spent less than thirty minutes reaching their decision. The group discussions were videotaped or audio taped with the participants' permission.

Students from an advanced small group communication class served as trained coders of the four decisions making functions. They utilized the five-point scales employed by Hirokawa in his functional studies (1985, 1988). Two expert judges were recruited from the Student Judicial Office at the university. They both had extensive experience in handling plagiarism cases. Using the two point criteria of "reasonableness" and "fairness" used in the Hirokawa studies, the judges made their judgments independently of one anther and were not told of the purpose of the study.

Results

Of the twenty groups, nineteen groups were usable in the data analysis. One of the video tapes malfunctioned during recording and the data was not retrievable. Using SPSS X forced entry multiple regression package, the group decision score was regressed onto all four independent variables. The regression analysis revealed no significant main effect at .Ø5 or above. The four variables taken individually also showed no significance. However, assessing the negative qualities of alternative choices approached significance at the .Ø5 level (See Table I). Intercoder reliability of the three trained coders revealed two acceptable levels of correlation and two unacceptable levels of correlation. For Variable 1 (assessment of the problematic situation) the alpha was .77. For Variable 2 (assessing requirement for an acceptable choice), the alpha was .69. For the third variable (assessing the positive qualities of alternative choice) the alpha was .68. For variable 4 (assessing the negative qualities of alternative choices). alpha was .78. The reliability coefficients between the two expert judges on "reasonableness" was .Ø9, and on "fairness," .3Ø.

After examining the quality of decisions, and discussing the differences between the two judges, it was agreed that Judge 1 had the most experience and had taken the job of rating the nineteen cases more seriously. Based on this discussion, Judge 2's ratings were dropped. A second

regression was run utilizing only Judge 1's ratings. In addition, the most variant coder was dropped, producing alphas between the two remaining coders of .86 for variable 1, .71 for variable 2, .75 for variable 3, and .79 for variable 4. The second regression analysis when only 2 coders and one judge were used is displayed in Table 2. Once again there was no significant main effect; however, variable 4 (assessing negative qualities of significant choices) was nearly significant at the .05 level.

Discussion

An important conclusion Hirokawa reached based on the 1985 study about the functional approach is that the competent performance of the four functions may be more essential than the sequencing of the functions in a formal agenda system in terms of reacting to quality group decision. The results of this study, in light of Hirokawa's 1985 and 1988 studies, indicate that it may also be true that not all four functions are equally important in reaching a quality decision about a specific task. In fact, the conclusion that the plagiarism case used in the three studies required the competent performance of the fourth function (assessing the negative qualities for alterative choices) was the key to reaching a quality decision. This variable was significant in the two Hirokawa studies and was the only variable that approached significance in this replication study.

McGrath (1984) argues that small group tasks can be divided into eight different types (pp. 60-66). The student plagiarism case is clearly what McGrath calls a Type 4 decision-making task where the group reaches a preferred answer as compared to a correct answer. The risky-shift line of research has demonstrated that changing the nature of the task within this type can produce significantly different results (Cartwright,1973). This may also be true for the functional theory. For example, if the functional theory was one that called for the group to select the most outstanding student, we might have found that the second function of assessing the requirements for an acceptable choice might have proved to be the most valuable in arriving at a quality decision. Such issues as grade point average, extracurricular activities, and student government participation may have constituted the criteria. Clearly the fourth function of applying negative qualities for alternative choices would not be nearly as important as they were in the plagiarism case. Thus, the four functions are not equally important, and are task dependent in terms of which function will prove to be more important in reaching a quality decision. Finally, functional theory of decision-making groups appears only generalizable to group tasks that have a preferred solution and not to the other seven tasks that McGrath outlines (e.g., Type 3 Intellectual Tasks that solve problems with correct answers or Type 8 Performance Tasks that are judged against absolute standards).

The negative results in this replication study may be due to the fact that untrained groups were used. The trained coders clearly had difficulty spotting and evaluating functions 2 and 3 (establishing criteria and assessing positive qualities of alternative choices), but had much greater success in reliably rating variable 1 and 4 (analyzing the problem and assessing the negative qualities of alternative choices). It appears that untrained groups intuitively go to the assessment of negative consequences when discussing a plagiarism case. Without being formally trained in an agenda system or the specific four functions, the group members did not systematically discuss all four functions. Without formal signposts, coders had difficulty rating them. The composition of the results of this study using untrained groups with Hirokawa's studies using trained groups may point to the conclusion that in order for groups to reach quality decisions, they need to be trained in effective problem-solving communication behaviors.

Another reason for nonsignificant findings in this replication study may be due to the fact that highly motivated full-fledged groups were used. All nineteen groups in the study seemed to work hard in trying to solve the problem. No one group tried to blow the assignment off. Thus, the variance from the best solution to the worst solution is not great, and consequently no significant was found. On the other hand, the ninety zero-history three-person groups used in the Hirokawa studies may have

contained a number of groups that made less than a good faith effort to do well on the task. If this were the case, coders would rate them low on their functions and the judges would rate them low on their solutions. Consequently there would be wide variance from good groups to bad groups in both competency of communication functions and quality of group outputs. Thus, noncompliance groups may be the reason for significance in the Hirokawa studies.

Theoretical explanations of small group decision-making which explain the relationship between communication process and group outcomes are important. The functional theory shows much promise. However, a more rigorous test is needed if the theory's power of explanation is to be increased. An experiment which contained full-fledged groups, half of whom are trained and half of whom are not, using four different Type 4 tasks would allow the answering of a number of important questions about the functional theory. Are the four functions of equal importance in reaching a quality decision or does the nature of the task dictate the primacy of one or two functions over the others? Do untrained roups who reach quality decisions intuitively perform well the four functions or must groups be trained in the four functions to do well? How task dependent is the functional theory? Replications such as this study demonstrate the importance of replication as a research activity in theory development. Unfortunately, in the last twenty years none of the over two hundred small group studies published in

speech communication journals was replicated (Cragan and Wright,1980;1990). Certainly key studies like Hirokawa's tests of the functional theory need to be.

References

Bales, R.F., and Strodbeck, F.L. (1951). Phases in group problem-solving. Journal of Abnormal and Social Psychology, 46, 485-495.

Bormann, E.G. (1970). The paradox and promise of small group research. Communication Monographs, 37, 211-217.

Cartwright, D. (1973). Determinants of scientific progress: The case of researsh on the risky shift. American Psychologist, 222-31.

Cragan, J.E., and Wright, D.W. (1980). Small group communication research of the 1970's: A synthesis and critque. Central States Speech Journal, 31, 197-213.

Cragan, J.F., and Wright, D.W. (1990). Small group communication research of the 1980's: A synthesis and critique. Communication Studies, 41, 212-236.

Gouran, D.S., and Hirokawa, R.Y. (1986). Counteractive functions of communication in effective group decision-making. In R.Y. Hirokawa and M.S. Poole (Eds.), Communication and groups decision-making (pp. 81-90). Beverly Hills: Sage.

Hirokawa, R.Y. (1985). Discussion procedures and decision-making performance: A test of a functional perspective. Human Communication Research, 12, 203-224.

Hirokawa, R.Y. (1988). Group communication and decision-making performance: A continued test of the functional perspective. Human Communication Reasearch, 14, 487-515.

Hirokawa, R. Yl., and Pace, R. (1983). A descriptive investigation of the possible communication based reasons for effective and ineffective decision-making. Communication Monographs, 50, 363-379.

Hirokawa, R.Y., and Scheerhorn, D.R. (1986). Communication in faculty group decision-making. In R.Y. Hirokawa and M.S. Poole (Eds.), Communication and group decision-making. (pp.63-80). Beverly Hills: Sage.

Larson, C E. (1969). Forms of analysis and small group problem-solving Speech Monographs, 36, 452-455.

McGrath, J.E. (1984). Groups: interaction and performance. Englewood Cliffs, NJ: Prentice-Hall.

Poole, M.S. (1983. Decision development in small groups III: A multiple sequence model of group development. Communication Monographs, 50, 321-341.

TABLE 1

M U L T I P L E R E G R E S S I O N

MULTIPLE R	.50508	ANALYSIS OF VARIANCE			
R SQUARE	.25511		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.04228	REGRESSION	4	10.61391	2.65348
STANDARD ERROR	1.48784	RESIDUAL	14	30.99135	2.21367

F = 1.19868 SIGNIF F = .3545

----------VARIABLES IN THE EQUATION----------

VARIABLE	B	SE B	BETA	T	SIG T
DQ4 (negative)	.458546	.221925	.659262	2.066	.0578
DQ3 (positive)	-.212818	.242373	-.258024	-.878	.3947
DQ1 (problem)	-.016004	.269102	-.024323	-.059	.9534
DQ2 (criteria)	-.116064	.362332	-.136787	-.320	.7535
(CONSTANT)	5.749730	2.046117		2.810	.0139

* 3 Raters 2 Judges

TABLE 2

M U L T I P L E R E G R E S S I O N

MULTIPLE R	.56754	ANALYSIS OF VARIANCE			
R SQUARE	.32210		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.12841	REGRESSION	4	30.85349	7.71337
STANDARD ERROR	2.15367	RESIDUAL	14	64.93599	4.63828

F = 1.66298 SIGNIF F = .2141

----------VARIABLES IN THE EQUATION----------

VARIABLE	B	SE B	BETA	T	SIG T
DQ4 (negative)	.839073	.394463	.580128	2.127	.0517
DQ3 (positive)	-.419718	.404544	-.257682	-1.038	.3171
DQ1 (problem)	-.018765	.431919	-.015351	-.043	.9660
DQ2 (criteria)	.029447	.588625	.017706	.050	.9608
(CONSTANT)	3.270735	2.784430		1.175	.2597

* 2 Raters 1 Judge