

## THE PREDICTION OF INTERACTION BEHAVIOR IN SMALL GROUPS: ZERO HISTORY VS. INTACT GROUPS

GAIL SORENSEN and JAMES C. McCROSKEY

THE conventional wisdom of the 1960's was that "communication is a process." The conventional wisdom of the present decade is that "communication is transactional." Both of these views emphasize the idea that one person's interaction behavior is, and ought to be, highly influenced by the way other people interact.

Nevertheless, it is clear that much interaction behavior cannot be explained simply by observing that given communication transaction. Individuals develop interaction behavior patterns that have some consistency from one communication encounter to the next. An appropriate model for explaining interaction behavior in small group communication, therefore, must take into account both the effects attributed to the antecedent orientations of the individuals involved and the unique interface of the individuals within the communication encounter. My interaction behavior with you is a product of what I am and what you do. Your interaction behavior with me is a product of what you are and what I do.

The present investigation was concerned with identifying the degree to which particular antecedent orientations of individuals can predict consequent interaction behavior in zero history and

intact small groups. It was hoped that this study would contribute to the understanding of small group communication in two ways. First, should it be found that certain antecedent orientations are significant and consistent predictors of interaction behavior, then that knowledge can be used directly in the building of a theory of small group communication. Second, should consistent prediction be found possible, later research can use the observed predictors as control variables to increase precision in studies designed to investigate other variables in the communication process.

It should be stressed that the main concern of this study was to determine whether *consistent* predictive relationships could be isolated that would apply to both zero history and intact groups. There has been considerable controversy concerning the generalizability of results of studies employing zero history groups to more real-life, intact groups. This study sought to provide a partial resolution to that controversy by studying both types of groups. This was accomplished by studying the same groups at two different times in their life, in their initial meeting (zero history) and six weeks (eighteen hours of meetings) later after the groups had ample opportunity to coalesce.

*Ms. Sorenson is an Instructor in Speech Communication at Salisbury State College. Mr. McCroskey is Professor and Chairman of the Department of Speech Communication at West Virginia University. This study is based in part on Ms. Sorenson's M.S. Thesis directed by Mr. McCroskey.*

### RATIONALE

Researchers in the area of small group communication have long considered "personality" to be an important anteced-

ent of communication behavior. "Personality" is a global construct used to represent a wide variety of orientations of the individual. The total personality "can be conceptualized as a group of interacting tendencies, each approaching a subself in complication: subselfs with different origins, different characters, associations, value implications, behavioral manifestations. . . ."<sup>1</sup>

A basic problem in previous research on both the personality construct and interaction behavior is that the conceptualization of these variables has often been narrowed to such a degree that maximum consideration has been given to a specific trait or behavior, while other potentially important and predictive dimensions have been overlooked. As Cattell, Eber and Tatsuoka state, "The best way to begin research or applied work in any new domain is to take cognizance of the total personality, in all its main dimensions."<sup>2</sup> This is not a universal attack upon the abstracting and segmenting that has taken place in empirical research on small group communication. As Hall and Lindzey have stated, "It is simply a reminder that the meaning of small segments of behavior can be fully understood only when seen within the larger framework of the entire functioning organism."<sup>3</sup>

McGrath and Altman make a similar observation which is specifically directed at small group researchers in the field of communication. They maintain that communication is a process and not a static state of being. The authors ask for ". . . more attention to analyses of the

behavior of groups—their interactions—as opposed to the products or outcomes of that behavior."<sup>4</sup>

Although personality in the global sense is likely to be an important predictor of interaction behavior in small group communication, it certainly can not be expected to account for all such behavior, nor even is it likely to account for a majority of it. The field of Speech Communication has been concerned for decades with another variable thought to be highly related to communication behavior. This variable has been variously labeled "speech anxiety," "reticence," and "communication apprehension." For years the primary focus of concern with this variable has been in the public speaking context. More recently the field has become increasingly aware that apprehension about communication may influence all of a person's communication transactions.<sup>5</sup> Extensive research, predicated on the assumption that communication apprehension affects communication behavior, has led to the recommendation that extensive therapy programs be implemented to help individuals reduce their anxiety about communicating.<sup>6</sup> In the area of small group communication, however, research indicating the effects of communication apprehension on interaction behavior has been notably absent.<sup>7</sup>

#### HYPOTHESES

The two hypotheses for this investigation were:

<sup>4</sup> Joseph E. McGrath and Irwin Altman, *Small Group Research* (New York: Holt, Rinehart, and Winston, 1966), p. 73.

<sup>5</sup> Gerald M. Phillips, "Reticence: Pathology of the Normal Speaker," *SM*, 35 (1968), 39-49.

<sup>6</sup> James C. McCroskey, "The Implementation of a Large-Scale Program of Systematic Desensitization for Communication Apprehension," *Speech Teacher*, 21 (1972), 255-64.

<sup>7</sup> For an exception, see J. Wells, "A Study of the Effects of Systematic Desensitization on the Communicative Anxiety of Individuals in Small Groups," Thesis San Jose State College 1970.

<sup>1</sup> Robert F. Bales, *Personality and Interpersonal Behavior* (New York: Holt, Rinehart, and Winston, 1970), p. 15.

<sup>2</sup> Raymond B. Cattell, H. W. Eber, and Maurice M. Tatsuoka, *Handbook for the Sixteen Personality Factor Questionnaire* (Champaign, Ill.: Institute for Personality and Ability Testing, 1970), pp. 5-6.

<sup>3</sup> Calvin S. Hall and Gardner Lindzey, *Theories of Personality* (New York: John Wiley, 1957), p. 396.

1. Personality variables are predictors of interaction behavior in zero history and intact small groups.
2. Communication apprehension is a predictor of interaction behavior in zero history and intact small groups.

#### OPERATIONALIZATION AND MEASUREMENT

##### *Personality*

Cattell's 16 PF Test was used to measure sixteen personality traits.<sup>8</sup>

The 16 PF measures sixteen personality factors which are relatively uncorrelated. Fifteen of the factors are reflected by six items each. The "intelligence" factor is composed of eight items. The other fifteen dimensions can be conveniently labeled as follows: cyclothymia, emotional maturity, dominance, surgency, character, adventurousness, sensitivity, trustfulness, eccentricity, sophistication, confidence, radicalism, self-sufficiency, self-control, and general anxiety. The reader is cautioned that the labels used above tend to over-simplify the actual constructs. For a more thorough explanation of each dimension, the reader should consult the handbook for the 16 PF measure.<sup>9</sup> Form C was used because the time required was suitable for a class period, and the reading level of the items was appropriate for the subject sample.

##### *Communication Apprehension*

The Personal Report of Communication Apprehension for College Students was used to measure communication apprehension.<sup>10</sup> Phillips describes an individual with communication-bound anxiety as, ". . . a person for whom anxiety about participation in oral communica-

tion outweighs his projection of gain from the situation."<sup>11</sup> This suggests, ". . . a broadly based anxiety related to oral communication rather than a variety of 'types' of communication-bound anxiety."<sup>12</sup> The Personal Report of Communication Apprehension for College Students (PRCA) includes not only items related to public speaking but also items on interpersonal communication, small group communication, and a few extreme public speaking situations, e.g., giving a speech on television. These are Likert-type scales administered in a five-choice response format. Previous research indicates that this instrument is reliable and unidimensional.<sup>13</sup> While the PRCA may be partially correlated with the "anxiety" scale on the 16 PF, the measures are supposed to index different, though partially related, anxieties.

##### *Interaction Behavior*

Perceived interaction behavior in a small group situation was determined by use of the Interaction Behavior Measure (IBM).<sup>14</sup> Methodological deterrents have created a myriad of problems in measuring small group communication interaction behaviors. Most previous researchers have relied on Bales' Interaction Process Analysis for small group communication interaction measurement.<sup>15</sup> There are several limitations imposed by the use of the IPA. Gouran states two major criticisms of this instrument.<sup>16</sup> First, the

<sup>11</sup> Phillips, p. 40.

<sup>12</sup> McCroskey, "Measures," p. 270.

<sup>13</sup> Ibid.

<sup>14</sup> James C. McCroskey and David W. Wright, "The Development of an Instrument for Measuring Interaction Behavior in Small Groups," *SM*, 38 (1971), 335-40.

<sup>15</sup> Robert F. Bales, *Interaction Process Analysis: A Method for the Study of Small Groups* (Cambridge, Mass.: Addison-Wesley, 1950). See also, Bales, *Personality*.

<sup>16</sup> Dennis S. Gouran, "Conceptual and Methodological Approaches to the Study of Leadership," *Central States Speech Journal*, 21 (1970), 222.

<sup>8</sup> Cattell, Eber, and Tatsuoka, p. 6.

<sup>9</sup> Ibid.

<sup>10</sup> James C. McCroskey, "Measures of Communication-Bound Anxiety," *SM*, 37 (1970), 269-77.

categories are mutually exclusive, which prohibits a particular interaction from being rated in more than one category. Second, the frequency data generated can only be subjected to nonparametric statistical analysis.

The properties or qualities of interactions are a primary concern when the researcher addresses her or himself to the problem of communication behaviors. Leathers developed the Feedback Rating Instrument which attempts to measure small group interaction along nine dimensions.<sup>17</sup> The IBM is an outgrowth of this earlier work by Leathers. Factor analyses indicated the presumed nine dimensions collapsed to form six dimensions.

The Interaction Behavior Measure was designed to reflect small group interaction behaviors which were assumed to be multidimensional. The six dimensions on the instrument are as follows:

1. *Orientation*—measured by the task-oriented, socio-emotional oriented, and ideational-personal scales.
2. *Tension*—defined by the tense-relaxed and bothered-cool scales.
3. *Flexibility*—reflected by the flexible-inflexible and changeable-unchangeable scales.
4. *Relevance*—measured by the relevant-irrelevant and related-unrelated scales.
5. *Interest*—defined by the interested-apatetic and involved-withdrawn scales.
6. *Verbosity*—defined by the wordy-short and brief-lengthy scales.

It should be noted that the IBM, in the initial study and a replication, required the raters to respond to individual interaction behaviors on the twelve

<sup>17</sup> Dale G. Leathers, "Process Disruption and Measurement in Small Group Communication," *QJS*, 55 (1969), 287-300.

scales. Larsen,<sup>18</sup> McMurry,<sup>19</sup> and Consoli<sup>20</sup> also used this procedure which allowed the raters to view the small group on video-tape, stopping the tape when the raters responded to a stimulus statement. They all reported satisfactory rater reliability in using the IBM. In addition, both McMurry and Larsen confirmed the original six dimensions of the IBM by factor analyses. Although the procedure employed in this study was not a precise replication, the IBM appeared to be the most appropriate means of recording the process of small group interaction in this investigation. It was also the most probable means of measuring independent, but not mutually exclusive, criteria amenable to regression analysis.

For the purposes of this study, therefore, the relevant constructs were operationally defined as follows:

1. "Personality" traits were the raw scores on each of the sixteen factors of the 16 PF.
2. "Communication apprehension" was the total score of the Personal Report of Communication Apprehension.
3. "Interaction behavior" was the mean score of the raters on each of the six dimensions of the IBM: orientation, tension, flexibility, relevance, interest, and verbosity.

#### Method

*Subjects.* Subjects were ninety-two students in six classes in small group communication at a midwestern university. These subjects were chosen so that it

<sup>18</sup> David C. Larsen, "The Effect of Transfer-of-Authority Leadership on Satisfaction and Group Interaction," Thesis Illinois State 1971.

<sup>19</sup> Robert I. McMurry, "A Comparison of Interaction Process Analysis and the Interaction Behavior Measure," paper presented at the International Communication Association Convention, Atlanta, 1972.

<sup>20</sup> Jan L. Consoli, "The Effects of Waiting Time on Anxiety, Nonverbal Behavior, and Verbal Nonfluencies," Thesis Illinois State 1971.

would be possible to test the research hypotheses with both zero history groups and ongoing groups and, at the same time, minimize subject variability between the two types of groups. In these classes groups were formed randomly and continued intact for six weeks. This permitted observation of their interaction behavior during their first meeting (zero history group) and six weeks later (intact group). Twenty subjects were lost from the second observation as a result of class attrition and absence.

*Procedures.* During the second meeting in each class the PRCA and Cattell's 16 PF, Form C were administered. The instructors passed out the questionnaires and explained that they were to be filled out as part of a study being done in the Department of Speech Communication. These forms were collected by the instructors and returned to the experimenters.

During the third week of class, an experimenter was introduced to each of the classes as an expert in small group interaction measurement, specializing in the use of the IBM. A video-tape was employed to train the students in the use of the IBM rating sheets. This session was designed to familiarize the students with the scales, and to determine the time that would be used between the ratings in the actual discussions. Each scale pole was defined and the students were encouraged to ask questions during their use of the instrument.

Class members, the following week, were randomly assigned to groups of four to six members each (depending on class enrollment). This was done by the instructors with no attempt to control the member personalities within each group. Each subject was given IBM rating sheets. This procedure was explained as a practical application of what the students had learned from the class the previous week. The groups were assigned

a problem-solving task by the instructor. The four groups were then divided into two groups on each side of the room. Two of the groups proceeded to discuss their task for twenty-five minutes. The remaining two groups rated each of the discussants once every five minutes. Each rater completed five ratings for each of the discussants in the observed group. At the end of the first discussion, the groups reversed roles, and followed the same procedure. The use of simultaneous discussions was an attempt to ease any anxiety that might be caused by being watched by a large number of students. The rating sheets from all four groups were collected by the instructor at the end of the second discussion period.

The instructors were asked to give group assignments for the following six weeks. The initial groups were kept intact, working together for approximately eighteen hours of class time. After that time, the instructors followed the same procedure by repeating the directions for the discussion and rating. The IBM ratings were collected and given to the experimenters.

*Data Analyses.* The data were analyzed in a series of multiple regression analyses following the step-wise procedure. Separate analyses were performed on the data representing the zero history groups (Time 1) and on the data representing intact groups (Time 2). The predictor variables were the unweighted scores on the 16 personality variables and the PRCA. The criterion variables were the scores on the six dimensions of the IBM. The IBM scores utilized in the analyses were the means for the rating on each dimension across the five time periods. The rating for each time period was the mean of the individual ratings given by the observers. These scores, therefore, typically represented 25 observations of the individual's interaction be-

havior (the exact number varying from 16 to 30, depending on the number of people in the observing group). The scoring procedure employed was believed to yield the best estimate of the subject's typical interaction behavior in that variability with regard to the time of interaction (when in the 25 minute discussion) and variability attributable to the individual raters were held to a minimum influence through this procedure.

The regression analyses were terminated when extraction of an additional step increased the explained variance by less than 1 per cent or when an entering variable in the analysis resulted in the over-all model being nonsignificant ( $p < .05$ ), whichever came first.

No attempt to determine the reliability of individual raters was made. Previous research using the IBM and student raters has established the reliability of the obtained ratings. Thus it was assumed that similar, satisfactory reliability would be obtained in the present study. It should be stressed that if this assumption were false, the result would be a reduction in the observed relationship between the predictors and interaction behavior in this study. Consequently, the results reported should be considered conservative estimates of the degree of any observed relationships.

### Results

*Time 1.* Table 1 reports the percentage of variance, standardized beta weights, and significance levels for the regression models obtained from the analyses of the data obtained during the first observation period (zero history group). Inspection of these results indicates that both hypotheses in this investigation were confirmed. Personality variables and communication apprehension were observed to be significant predictors of interaction behavior in small groups.

*Time 2.* Table 2 reports the percentage of variance, standardized beta weights, and significance levels for the regression models obtained from the analyses of the data obtained during the second observation period (intact group). Inspection of these results also indicates support for the hypotheses that personality and communication apprehension are significant predictors of interaction behavior in small groups.

### Discussion

The most striking result of this study is not directly related to the hypotheses. While personality and communication apprehension were significant predictors of interaction behavior in both the zero history and the intact groups, there was very little similarity between the two series of analyses. Communication apprehension predicted Tension in both cases, adventurousness predicted Relevance, and surgency and adventurousness predicted Interest in both. Beyond that there was no comparability of significant predictors. Cyclothymia, intelligence, and dominance were never significant predictors, although they were included in models that achieved significance.

There has been considerable discussion in the literature concerning the generalizability of research results from zero history groups to intact or on-going groups. The evidence from this investigation certainly suggests caution for any such generalizing. This is particularly important because in this investigation our zero history and intact groups were the same people, merely observed at different points in the development of their groups.

Although our general hypotheses were supported, it is clear that the relationships between personality/communication apprehension and interaction behav-

TABLE 1  
RESULTS OF MULTIPLE REGRESSION ANALYSES FOR ZERO HISTORY GROUPS

Predictor	Standardized Beta Weights on Criterion Variables					
	Orientation	Tension	Flexibility	Relevance	Interest	Verbosity
PRCA	—	-.27*	—	-.15	-.27*	-.39*
Cyclothymia	-.18	—	-.17	—	—	—
Intelligence	—	.16	—	—	—	—
Emotional Maturity	-.28*	.16	.29*	-.14	-.14	—
Dominance	—	—	—	—	—	-.10
Surgency	—	—	.22	-.20	-.25*	—
Character	.12	—	—	—	—	—
Adventurousness	.25*	.17	—	.27*	.33*	.22
Sensitivity	—	.17	—	.25*	.25*	.14
Trustfulness	-.15	—	.17	—	—	—
Eccentricity	—	—	—	—	.23*	—
Sophistication	—	—	-.15	-.13	—	—
Confidence	—	—	—	-.17	-.16	—
Radicalism	.14	—	—	—	—	.26*
Self-sufficiency	—	.12	—	.16	—	.20
Self-control	.18	—	.25*	.11	.15	.17
Anxiety	.24*	.17	.26*	.18	.25*	.26*
Percentage of Predicted Variance	17	23	19	20	27	26
F-ratio	2.11	3.57	2.85	2.05	3.40	3.61
Significance Level	<.05	<.05	<.05	<.05	<.05	<.05

\*Significant predictors

TABLE 2  
RESULTS OF MULTIPLE REGRESSION ANALYSES FOR INTACT GROUPS

Predictor	Standardized Beta Weights on Criterion Variables					
	Orientation	Tension	Flexibility	Relevance	Interest	Verbosity
PRCA	—	-.43*	—	—	-.17	-.17
Cyclothymia	—	—	—	—	—	—
Intelligence	.13	—	.21	.19	.15	—
Emotional Maturity	.13	—	—	—	—	—
Dominance	—	—	—	—	—	.12
Surgency	-.52*	—	—	-.40*	-.33*	-.30*
Character	.27*	—	—	—	—	—
Adventurousness	—	—	—	.27*	.24*	.25*
Sensitivity	—	-.11	—	-.12	—	.20
Trustfulness	—	.24*	—	—	—	—
Eccentricity	-.15	—	—	—	—	—
Sophistication	.13	-.30*	-.31*	—	—	—
Confidence	-.26*	—	—	—	—	-.20
Radicalism	—	.14	—	—	—	—
Self-sufficiency	—	.29*	.27*	—	—	—
Self-control	.27*	—	-.13	.10	.12	.15
Anxiety	—	—	—	—	—	—
Percentage of Predicted Variance	25	38	21	18	15	19
F-ratio	2.61	6.56	4.41	2.91	2.93	2.31
Significance Level	<.05	<.05	<.05	<.05	<.05	<.05

\*Significant predictors

ior in small groups are heavily influenced by the previous history of the group. While some personality variables influence some interaction behaviors at one point, other personality variables influ-

ence these same as well as other interaction behaviors at another point.

One comment needs to be made concerning the amount of variance it was possible to predict in this study, ranging

from 15 to 38 percent. This may seem to be comparatively little variance. However, it should be taken into account that we should not expect our predictors to account for most of the variance in interaction behavior, or possibly even a majority of it. Attitudes of the individual on the topic, behaviors of other groups members, and communication environment should all introduce uncontrolled variance. Further, although the reliability of the measures employed in this study has been established in previous studies by other researchers, the instruments are not *perfectly* reliable. The most reliable predictor (based on previous reports) was the PRCA with estimated reliability of about .90 internally and .80 over a ten-day delay. The IBM has reported reliabilities ranging from

.60 to .80 on the various dimensions. Thus a "perfect" relationship between the most reliable predictor and the most reliable criterion measure at the first observation period would only result in .72 accountable variance. At the other observation point the most reliable predictor (PRCA, .80) and the least reliable criterion (.60) could be expected to account for no more than 48 percent of the variance.

In sum, the results of this investigation indicate that personality and communication apprehension are significant predictors of interaction behavior in small groups. What personality variables and whether communication apprehension predict(s) what interaction behavior(s) is heavily influenced by the previous history of the group.