DOCUMENT RESUME

ED 207 122 CS 503 617

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TITLE Equivocal Messages in Organizations.
PUB DATE May 81
NOTE 49p.; Paper presented at the Annual Meeting of the International Communication Association (Minneapolis, MN, May 21-25, 1981).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Ambiguity; College Students; *Communication Research; Comprehension; *Employment Level; *Group Dynamics; Higher Education; *Organizational Communication; *Patterned Responses; Receptive Language

ABSTRACT

A study was conducted to examine the ways individuals in organizations interpreted and responded to ambiguous messages. Using Karl Weick's model of organizing, investigators measured the number of rules (criteria for taking action), the number of people, and the frequencies of message categories generated in two simulated organizations comprised of 51 college students. The students acted in company positions at three organizational levels--upper management, middle management, and work groups (foremen and workers)--and responded individually and collectively to high, medium, and low ambiguous organizational messages. The results showed that the subjects used more rules and more people to process high ambiguous messages than they did to process low ambiguous messages. Analysis of group interaction revealed that most groups spent their talk time reducing equivocality. Workers and foremen reduced ambiguity by adding interpretations while managers proposed specific action steps. Overall, the study indicated that misunderstandings in organizations might evolve from divergent approaches to the management of equivocality. Since some degree of equivocality is present in all organizational input, the way individuals interpret and process this ambiguity is a key to understanding how organizations make sense of their activities. (RL)

EQUIVOCAL MESSAGES IN ORGANIZATIONS

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EQUIVOCAL MESSAGES IN ORGANIZATIONS

Organizational literature abounds with essays aimed at improving the precision, clarity, and accuracy of oral and written messages (McMurry, 1965; Wells, 1968; Sigband, 1976). Source-oriented and receiver-oriented assumptions of communication underlie most of these essays. Source-oriented approaches stress the sender's ability to construct clear, concise, and coherent messages while receiver-oriented models shift the locus of communication to the receiver; hence misunderstandings in communication accrue from perceptual differences and from the semantics of interpreting messages (Burgoon, 1974). Concepts that derive from the receiver perspective include allness, semantic information distance, and selective perception (Haney, 1973; Thayer, 1968; Tompkins, 1962). The sender-view, then, places the onus of misunderstanding on message construction while the receiver-orientation shifts this burden to the interpretation of messages. Both perspectives emphasize message fidelity and the prevention of communication breakdowns (Hoslett, 1951; Steiglitz, 1958). While neither orientation is inaccurate, both provide an incomplete picture of the complexity involved in constructing and interpreting equivocal messages.

The situational perspective, unlike the sender and receiver models, suggests that the meanings of messages emanate from a combination of the structure of the message, the interpretations of receivers, and the interactional context; hence, ongoing events and interlocked behaviors frame the interpretation of messages. As Weick (1979) observes:

> Just as ambiguous words become more clearly defined when they're placed in sentences, the equivocality of cues is reduced when they are embedded in the total situation. Meaning is suggested only when one takes account of surrounding stimuli (p. 182).

This orientation does not imply that messages are devoid of inherent characteristics; instead, it argues that they evolve from the communicative behaviors of participants within an organization. Message processing in organizations, then, is a social activity whereby individuals interpret the meanings of events within a particular context (Johnson, 1977).

This study examines the ways that individuals impose meaning on their environment through the interpretation of and response to ambiguous messages. While this research tests the selection stage of Weick's (1979) model, it also examines the impact of organizational level on message processing. Our goal, then, is to employ multiple methods to describe the processing of equivocal messages. It is not our intent to extend these findings to other organizations. The small sample size, particularly for upper management, and the use of simulated organizations preclude such generalizations.

Theoretical Rationale

Organizational behavior and organizational theory are indeed complex; far more complicated and entangled than much of our research reveals. Theorists who bemoan our simplistic and often self-evident explanations urge us to pose better research questions and to get closer to our data (Helskanen, 1967). One scholar who espouses a complex and particularly appealing model for the study of message ambiguity is Karl Weick (1979), author of The Social Psychology of

Organizing. Weick's (1979) model centers upon the processing of equivocality. Equivocality refers to conditions that evoke multiple meanings; meanings that cannot be easily merged or compromised. In this sense, equivocality is like a pun, i.e., a play on words. An example is the statement, "The groups were broken down by sex" (Weick, 1979, p. 172). Were the groups divided into male-female subgroups; were they in a state of sexual exhaustion; or was sexual decadence leading to a breakdown in social values? The selection of one interpretation reduces the possibility of adopting other meanings. Even though equivocality is present in all information, some organizational inputs are more equivocal than are others. The degree of equivocality in an input hinges upon "multiple indicators" or the "possible connections that can be imposed on a rich assortment of variables" (Weick, 1979, pp. 173-174). Organizations manage equivocality by imposing meanings on events; meanings that reduce, maintain, or increase equivocality.

The process of choosing meanings occurs in the selection stage of Weick's model. During this stage members also determine the individuals and groups that should handle these interpretations (Weick, 1979, p. 175); hence three critical processes occur in the selection stage: 1) individuals choose interpretations, 2) they select the type and number of rules to process these interpretations, and 3) they initiate communication cycles to act upon these interpretations.

Equivocal inputs enter the selection stage as created or enacted events. Organizational members isolate words and actions from the stream of ongoing experience (enactment) and then they reflect on their behaviors and past interpretations (retention) as criteria for interpreting these events (selection). These criteria or assembly rules act as causal maps for selecting among probable interpretations and for mobilizing appppropriate action. For

example, an organization may choose an interpretation and then process it by following standard operating procedures--"send it to the same people for the same types of reports we always produce." In this case, the assembly rule employed is frequency of use. Weick (1979) postulates that the amount of perceived equivocality embedded in an input influences the number of rules used to process that information. He contends that individuals will use fewer assembly rules to process high equivocal messages and more rules to manage low equivocal inputs. Assembly rules guide the selection of communication cycles. A communication cycle is a combination of messages (acts), the response to messages (interacts), and adjustments to the responses (double interacts). An inverse relationship exists between rules and cycles. When individuals choose more rules as guidelines for managing equivocality, they automatically select fewer double interacts because only a small number of cycles will fit all the rules. In contrast, fewer rules permit the use of more cycles; a practice that reduces more equivocality.

As an example of this process, let's assume that the administration of a large university hears that the head basketball coach is investigating other coaching positions. When this enacted event enters the system, it is isolated from the stream of ongoing experiences. Individuals who view this rumor as highly equivocal impose multiple meanings on this information, employ only a few rules to select cycles, and rely upon a large number of double interacts. That is, they select multiple explanations for the coach's behavior, for example, the coach is leaving because: 1) the athletic director is unhappy with the recruitment program, 2) he is being lured by another school, or 3) members of his family are unhappy with this locale. Since this information is judged as high in equivocality, the recipients would use only a few rules to select interpretations and cycles; for example, 1) cause the least disruption

to the current state of the basketball team, 2) verify the input (Weick, 1979, p. 113). A large number of cycles would fit these rules; namely, administrators could interview the coach and the athletic director, check out the salary ranges and fringe benefits for competing jobs, talk with high school coaches, and obtain records on the coach's recruiting performance.

If, however, the administration treats this information as low in equivocality, they might impose one interpretation on the situation and act in accordance with that interpretation. Let's say the administration selects the interpretation that the coach is being lured by other schools. Then they employ a number of pre-set assembly rules like the following: make a competitive counter-offer, offer the coach additional fringe benefits, involve experienced people in persuading the coach to remain, and protect the good image of the team. These rules, in turn, prohibit some actions and direct the recipient to only a few cycles; namely, compete with the offers the coach receives from other schools. The less the perceived equivocality, the greater the number of rules, the fewer the number of cycles, and the less equivocality reduced. In contrast, the greater the equivocality, the fewer the rules, the greater the number of cycles activated, and the more equivocality removed.

In summary, Weick's (1979) model is directly applicable to the study of communication in organizations. First, it centers upon the processing of message equivocality. Secondly, it treats the selection of decisions as a meaning-centered activity; hence equivocality is collectively interpreted and socially managed. Third, it employs double interacts (message, feedback, response to feedback) as the cycles used to process equivocality.

Research on Weick's Model of Organizing

Two studies have examined Weick's model of organizing (Bantz & Smith, 1977; Kreps, 1980). Both studies test the relationship between equivocality and cycles, but the conclusions of the first study contradict the findings of the second one. Bantz and Smith (1977) operationalize cycles as the number of adjectives deemed necessary for triads to clarify the meaning of select literary passages. They report that the equivocality of passages has no significant effect on the number of adjectives selected. Several design problems may contribute to these results: (1) the number of adjectives used to clarify a passage is not an effective measure of double interacts (Kreps, 1980), 2) participants in the experiment lack a history of group interaction, and 3) the experiment fails to capture the natural selection and developmental nature of Weick's model.

Kreps (1980) employs three semantic differential scales to assess perceived equivocality of 24 Faculty Senate motions; then he counted the number of double interacts generated during the Senate deliberations on each of the ten motions. Contrary to Bantz and Smith (1977), Kreps (1980) reports that high equivocality generates more double interacts than does low equivocality. The Kreps (1980) study is a commendable field investigation of Weick's (1979) model. But it is admittedly a post hoc design in that the evaluation of Senate motions occurs after the actions taken on these motions; hence the way they were acted upon may influence the way Senators evaluated them. Secondly, it is difficult to discern which aspects of the Senate motions contribute to equivocality. Is it the syntax, the content, or the perceptions of both that contribute to evaluations of these motions? Finally, Krep's (1980) investigation does not examine the role of assembly rules in the selection of communication cycles.

Research Design

This study expands upon previous research in the following ways: manipulation of messages to incorporate four aspects of ambiguity, analysis of message processing by hierarchical level, inclusion of assembly rules in the processing of messages, and the use of multiple measures to examine assembly rules and behavioral cycles.

Independent Variables

The two independent variables in this study are ambiguous messages and organizational level. Ambiguous messages refer to cues that trigger multiple meanings and can be "coordinated with two or more original events" (Weick, 1979, p. 180). That is, ambiguous cues and equivocality exist in a parallel relationship (p. 182).[1] The nature of the input influences the amount of equivocality engendered in the receiver. The receiver, then, must activate processes to manage the equivocality and to select the interpretations that are most appropriate in a given context.

In an operational sense, the structure of an ambiguous message influences the probability of multiple meanings. In this study ambiguity consists of four components: use of abstract language, lack of specific details, absence of a course of action, and perceived message equivocality. Even though the most critical component is perceived message equivocality, specific structural features of the message itself contribute to ambiguity. Abstract language triggers more ambiguity than does concrete language (Hayakawa, 1972). Abstractions are hard to categorize; they connote multiple images; and they stand for multiple referents. For example, the comment that "George acts like a child," could mean that George throws temper tantrums or pouts when he is angry or is unnecessarily jealous of his over-ambitious peers. All of these

behaviors could fall into the category of childish acts, but not all of them are necessarily what the sender intended. The abstraction, "acts like a child," denotes multiple referents and connotes multiple interpretations (Johnson, 1977). Significantly, Weick (1979) notes that ambiguous words, synonyms, and adjectives constitute more original inputs in organizations than do unequivocal nouns.

Two other characteristics of message ambiguity are lack of specific details and the absence of an explicit or implied instruction (Thayer, 1968). A detailed message frames the context of a statement with precise and specific referents to the sender's intentions (Davis, 1968). Specific details and requests for action reduce the number of plausible interpretations. For example, the comment, "George acts like a child in that he withdraws from interaction and sulks when he is angry at others (specific details). I think we should talk with George about the harmful side-effects of his behavior" (course of action); reduces the equivocality of the previous statement that "George acts like a child." While some equivocality accompanies any message, the addition of specific details, concrete language, and a course of action guides the receiver to particular interpretations. For this study Hi E messages embody at least one high abstraction term, few specific details, and no explicit or implicit course of action whereas the Lo E messages contain concrete terms, specific details and an explicit request for action.

But meanings are not restricted to the sender's intentions. Equivocality also emanates from a personal response to symbols and word usage. Thus, "the same words have different interpretations to each person in the same context" (Johnson, 1977, p. 64). Since interpretations are personal in nature, equivocality also resides in the perceptions of receivers. For this study a six-item scale designed to tap perceived equivocality serves as a manipulation

check of message ambiguity. The scale contains the following items: 1) how many ways do you think this statement could be interpreted, 2) how complicated or complex is this message, 3) how easy is it for you to determine the specific meaning of this message, 4) how clear is this message, 5) how easy is it to determine an appropriate course of action or response to this message, and 6) to what extent does this message indicate what action should be taken on this matter.

The second independent variable is organizational level. Research on semantic interpretation of messages suggests that agreement on the meaning of words, concepts, and events varies across levels of the organization (Tompkins, 1962; Redding, 1972). Schwartz, Stark, and Schiffman (1970) report differences between two levels of management and two levels of union officers in their interpretations of such concepts as solidarity, strike, management, and sensitivity. Using a method of "congruence analysis," Minter (1969) observes that semantic meaning of specific topics differs across levels approximately 60% of the time. Triandis (1959a, 1959b, 1959c) notes that supervisors and subordinates differ in their criteria for making judgments about people and events and Maier, Hoffman and Read (1963) report differences between levels in descriptions of subordinate job duties--even if the supervisor previously held the subordinate's position. Jablin (1979) concludes that the research on semantic interpretation of information consistently demonstrates different meanings for events across organizational levels.

These semantic discrepancies reflect different value systems and experiences (Redding, 1972). Discrepant experiences might also contribute to the number of rules and cycles used to process these interpretations. Research on feedback and on transmission of information supports this assumption. Specifically, superiors and subordinates differ in the amount of feedback they

provide (Cook, 1968; Greller & Herold, 1975) and in the way they process feedback (Brenner & Sigband, 1973). In particular, Harvey & Boettger (1971) report that written messages in organizations frequently contain double meanings. When these messages come from upper managers, subordinates interpret and act upon them without clarifying the ambiguity; they do not want to look stupid or to waste their supervisor's time. Supervisors, in turn, spend considerable time and resources trying to determine why their messages were misinterpreted. In summary, research on semantic agreement in organizations shows that hierarchical position influences interpretations of organizational messages. Moreover, feedback or responses to ambiguous messages are processed differently across organizational level. This literature leads to the following non-directional hypotheses:

H_1: Organizational level will influence the number of rules employed to process Hi and Lo E messages.

H_2: Organizational level will influence the number of cycles used to process Hi and Lo E messages.

Dependent Variables

A combination of methodologies were employed to examine assembly rules and communication cycles. Specifically, researchers developed questionnaires, conducted interaction analysis of group talk, and employed content analysis of written feedback. This triangulation of methods to study the same phenomena served as a between-method test of validity (Jick, 1979). In this study multiple methods were used to explain or to expand upon the self-report data.

Self-Report Data. Assembly rules are recipes or guidelines that members use to isolate interpretations and to mobilize communication activity. For this study we combine Weick's (1979) notion of retrospective analysis with

identification of assembly rules. Weick (1979) argues that "action precedes thought" (p. 194). That is, people must act before they can understand the meaning of their actions. In this investigation assembly rules were operationalized as criteria or rationale for action; these rules were identified after the subjects processed messages. We asked participants to reflect upon their decision for processing each message and then to identify from a list of 16 possible rules which ones influenced their decision.[2] The 16 rules were drawn from Weick's (1979, p. 113) list of typical assembly rules. Weick's model suggested:

H_3: Organizational members will use fewer rules when processing Hi E messages than when processing Lo E messages.

The second dependent variable, communication cycles, consisted of double interacts or message-response-adjustment cycles. Cycles were operationalized as the number of people who should eventually receive a feedback message. While we did not ask the recipients to send an adjustment to the feedback, we told subjects that recipients were expected to follow-up on these messages. Although this measure was not a direct assessment of double interacts, it embodied the idea of a message-response-adjustment cycle. Weick's model suggested:

H_4: In Hi E conditions individuals will send message responses to more members then they will in low E situations. (The inverse states that responses to ~~Lo E messages~~ will be sent to fewer people than will responses to Hi E message).

Category System for Analysis of Written Feedback and Group Interaction. In addition to questionnaires, assembly rules and communication cycles were assessed through the analysis of written messages and group interaction. These analyses focused on the type of responses used to evaluate messages, to select assembly rules, and to choose communication cycles. The category system consisted of three dimensions; evaluation, equivocality management, and assembly rules. Two of the three, equivocality management and assembly rules, were similar to dimensions three and four of the Social Information Process Analysis (SIPA) developed by Fisher, Drecksel, and Werbel (1979); the specific categories within each dimension, however, differed to some extent.[3] These categories originated from Weick's (1979) explanation of assembling a process; that is, individuals assessed the degree of equivocality embedded in a message and then they employed assembly rules to accept, reject, or modify the act. In all cases the equivocality was managed but some cycles reduced more equivocality than did others. Fisher, et. al. (1979) presented five scalar categories that determined whether a response reduced, increased, or maintained the equivocality embedded in an initial message. Management of equivocality, then, was based on the way individuals modified the initial message during group interaction or in their written feedback.

The following categories were used to analyze equivocality management and assembly rules. Each statement contributed either to the reduction, maintenance, or increase of the current state of equivocality.

The following categories exemplify this process:

Dimension 1: Evaluations

1. Accepts the initial message--responds favorably.
2. Rejects the initial message--responds disfavorably.
3. Withholds judgments--no clear evaluation implied.

Dimension II: Equivocality Management

1. Reduce Equivocality

   a. Action proposal--alters original message by modifying or proposing a course of action, e.g., "We agree to work overtime, but we feel this policy should not apply to weekends." This category resembles Weick's (1979) notion of modifying the assemblage (p. 115).

   b. Interpretation--modifies the interpretation of a message or constructs a new interpretation, e.g., "Morale is bad here because management ignores the feelings of workers." An interpretation modifies the preposed explanation or constructs a new explanation for the original message.

   c. Combined Interpretation and Action--modifies or alters both aspects of the original message, e.g., "This company has information overload problems because people are bored and have nothing better to do. We think management should speed up the production process and hold more company meetings."

2. Maintain equivocality

   a. No modification--accepts message without modifying the content of the statement, e.g., "We concur with this message and think it is a good idea."

   b. Seeks clarification--initiates communication cycles aimed at clarifying the sender's intent, e.g., "What type of information overload? Could you give us more specifics? Both alternatives are similar to Weick's (1979) cycles of maintaining interpretations, assemblages, and constructions.

3. Increase equivocality

Redirects the message by adding an equivocal clause. The feedback to the original message increases multiple meanings and is redirect to another person, e.g., "Morale is a problem for the personnel department." The personnel manager can interpret this message in several ways; namely, is the sender saying that the personnel department has a morale problem or that company-wide morale problems should be handled by the personnel department?

The second dimension, assembly rules, originated from the rules questionnaire. But rather than employ all 16 rules, we correlated responses on the checklist and identified pivotal items and clusters of similar rules through elementary linkage analysis (McQuitty, 1957). The selection criteria for inclusion of items into the linkage analysis was r = .30, the median correlation coefficient.[4] This process led to the following categories:

Dimension III: Assembly Rules

1. Productivity--select cycles that enhance company image, efficiency, or productivity, e.g., "A safer firework will help the image of this company and bring in more business."
2. Relevance--select cycles that are congruent with the presumed content of the message, e.g., "Construction of the body unit is of primary interest to subassembly three. Send the message to Fred."

3. Acceptability--select cycles that lead to satisfaction; ones that absorb the greatest number of people, e.g., "I think workers will be willing to work overtime if we give bonuses in addition to overtime pay. Let's ask them for a response to this idea."
4. Feasibility-Satisficing--select cycles based upon issues of workability (experienced people, available people, previous success) or that cause the least disruption (shortest time, least effort, least harmful side effects), e.g., "I think the easiest way to make our model safer is to remove the horizontal fins. Yea, we can do that quickly without upsetting the work flow. Let's ask Jan if she agrees."
5. No rationale or criteria included in the contribution, e.g., "What does this mean? What do you guys want to do about it?"

Methods and Procedures

Subjects

The subjects for this study were fifty-one juniors, seniors, and graduate students in two organizational communication classes at a large Midwestern university. Students earned merit points by participating in one of two simulated, bureaucratic organizations[5] that functioned for 16 hours or for eight class sessions; each session was two hours in length. The instructors interviewed and placed students into company positions based upon their qualifications, training, previous work experiences, and job preferences.

Forty-seven of the 51 members had previous job experience, eight of them had held supervisory positions.

The product-based corporations consisted of three departments with three organizational levels: upper management (presidents and vice-presidents), middle management (managers and supervisors), and work groups (foremen and workers). The primary goals of the organization were to make a profit in the sale of firework models and to sell more models than their competitor did. The free-simulation experimental design exposed participants to a large number of actual organizational events in a semi-controlled setting (Fromkin & Streufert, 1976). It provided a means of creating field research within the laboratory (Jandt, 1974; Cohen & Cyert, 1965). Although the incompleteness of this model created some obvious limitations (namely, realization of an impending termination point, intensity of problem-solving in concentrated time periods, and the zero-history nature of an organization), it offered a feasible means of studying the creation and processing of equivocal messages.

Message Selection

Thirty messages that reflected organizational activities were generated from written memos and verbal interaction during the first two days of the simulation. The 30 messages fit three categories of ambiguity: high, moderate, and low, 10 in each category.[6] Each message was evaluated by 29 independent raters on the 6-item message ambiguity scale. Three bogus items were included to control for demand effects. The Purdue Instrument Analysis System (PIAS) was used to determine the internal consistency among the six items. Cronbach alpha for the six items was .88 with an average item-total correlation of .70. The investigators selected the four messages with the highest and the four messages with the lowest overall ratings to use in the investigation. Due to time limitations, the moderate equivocality category was

eliminated from further analysis. Table 1 presents the eight messages with mean ratings.

Procedures

A key element in Weick's model is the role of consensual validation in the processing of information. In both simulations, organizational members frequently met in three-person groups: upper managers met in one group, middle managers met either in a supply or in an assembly group, and workers met in their respective work teams. On the fourth and fifth days of the simulation investigators began the experiment by assembling members of both organizations into their respective groups; a total of 17 triads for the two organizations. Subjects were told that the experiment focused on group communication.

Each individual received from his or her immediate supervisor a memorandum which contained a Hi or Lo E message. Individuals judged the message on the 6-item ambiguity form used in the pretest. Subjects then started the tape recorder and discussed their reactions to the message. After subjects interacted for a maximum of 15 minutes, they prepared a written response to the message. Then, without conferring with other members, subjects completed questionnaires on the rationale for their group's response (assembly rules) and a list of organizational members who should receive this response (communication cycle). This procedure was repeated for each of the eight messages. For each organization the order of the message was randomly assigned and systematically rotated between the two organizations.

Statistical Analysis

Data analysis for the self-report measures employed a 3 x 2 x 8 statistical design (organizational level x type of equivocality x message) with repeated measures on the equivocality and message dimensions (Winer, 1971). Messages were nested within Hi and Lo E, four messages for each type. Prior to

running statistical tests, frequency data was normalized with a logarithmic transformation in accordance with Kirk's (1968) procedure. Data was analyzed with a BMD-P2V computer program for unequal cell size and repeated measures ANOVA. In the larger organization, one work team was eliminated due to problems in completing the self-report data. Since the three factors were fixed, the message x equivocality interaction produced an artifactual result which was corrected for by combining the error variance for both factors to produce an approximate F ratio for this interaction (Kirk, 1968). If significant results were obtained for any of the effects, data were subjected to a post hoc Newman-Keuls procedure to determine which organizational level(s) or message(s) contributed to the effect.

In addition, repeated measure ANOVAs were employed to analyze category frequencies for the written messages and the group interaction. In this analysis the investigator combined the frequencies for the Hi E and for the Lo E messages. Category data, then, was analyzed with a 3 x 2 ANOVA (level x equivocality) for the three category dimensions.[7] The assembly rules dimension was excluded from analysis of the written messages and the evaluation categories were omitted from the group analysis. In both cases, each act received two code numbers. The experimenters used logarithmic transformation to normalize data for the written messages and used percentages to transform data for group interaction.[8] When statistical tests yielded significant results, a post hoc Newman-Keuls was used to identify the variables that contributed to this effect. Also, category means per message were computed and used to interpret significant effects.

Results

Reliability and Manipulation Checks

Generally high reliabilities were obtained in coding the three dimensions. The categories within these dimensions were exhaustive and mutually exclusive. For the written feedback, the unit of analysis was one complete message and for the group interaction, an uninterrupted utterance by one member served as the unit of analysis. Two trained coders received a .80 Scott's Pi coefficient for message evaluation and a .77 coefficient for equivocality mamagement for analysis of the 134 written messages (Holsti, 1969). Two different coders also analyzed 135 pre-selected acts of the group interaction and received a .83 coefficient for equivocality management and a .79 for assembly rules. Hence, reliability tests for both analyzes yielded generally high coefficients.

A manipulation check on Hi and Lo equivocality revealed that subjects perceived the four Hi E messages as more ambiguous than they viewed the Lo E messages ($F = 101.8$, $df = 1,45$, $p < .0001$, $r^2 = .48$; see Table 2).[9] The mean rating for Hi E messages ($m = 18.23$) almost doubled that of the four Lo E messages ($m = 11.03$). Analysis of the ratings by level of the organization revealed no significant results ($F = .92$; $df = 2,45$, $p < .18$, power = .10). Although there was a main effect difference for the message variable ($F = 3.55$, $df = 6,270$, $p < .001$, $r^2 = .30$), a post hoc test showed that this was attributed primarily to the clusters of the four Hi E and the four Low E messages ($F = 12.53$, $df = 6,270$, $p < .001$, $r^2 = .42$). Hence, the four Hi E and the four Lo E messages received generally consistent evaluations across organizational levels and message types. The message manipulations, then, were successful in that judgments of ambiguity were consistent for the equivocal messages.

Analysis of Dependent Measures

Assembly Rules. Assembly rules served as rationale for a group's reaction to a message. Analysis of the mean frequencies of rules revealed main effect differences for Hi and Lo equivocality and interaction effects for organizational level and for individual messages. Consistent with H_3, more assembly rules were selected to process Lo as opposed to Hi E messages. Subjects employed significantly fewer rules in response to Hi E as opposed to Lo E messages ($F = 15.05$; $df = 1,45$ $p < .0003$; $r^2 = .45$, see Table 3). As Weick predicted, the number of rules was inversely related to the amount of equivocality perceived in an [illegible]. Subjects used more criteria to process Lo E messages and fewer guidelines to process the ambiguous stimuli.

While this pattern was consistent for all levels of the organization, upper management selected fewer rules than did middle or lower levels, particularly for the Lo E messages ($F = 3.67$; $df = 2,45$; $p < .04$; $r^2 = .30$). This finding confirmed H_1; thus providing support for the assumption that organizational level influenced the processing of Hi and Lo E messages. But in the Lo E category, messages #2 and #4 contributed to these differences ($F = 7.25$; $df = 6,270$; $p < .001$; $r^2 = .18$). For message #2, middle and lower levels selected more rules than did upper management ($F = 4.43$; $df = 2,47$; $p < .02$; $r^2 = .16$) and for message #4 members of the lower and upper levels chose fewer rules than did middle managers ($F = 5.59$; $df = 2,47$; $p < .01$; $r^2 = .20$). Foremen and workers did not consistently follow either upper or middle managers in the number of rules they selected. Instead, they aligned with middle managers on message #2, perhaps because the subject matter of the message fit their organizational speciality, but they paralleled upper management's response on message #4. As a whole, middle and lower levels employed more assembly rules than did upper management, particularly for Lo E messages.

Communication Cycles--Number of People. In this study, the number of people was an indice of communication cycles. Contrary to the predictions in H_4, responses to Lo E messages were sent to more people and responses to Hi E statements were sent to fewer employees ($F = 36.7$; $df = 1,45$; $p < .0001$; $r^2 = .45$). In effect, subjects indicated from a list of organizational members that few people should receive responses to the Hi ambiguous messages.

Consistent with H_2, level of the organization interacted with equivocality in the number of people selected. Specifically, upper management sent responses to significantly more people than did middle managers and workers ($F = 14.03$; $df = 2,45$; $p < .001$; $r^2 = .25$), especially for three messages--#2 ($F = 18.38$; $df = 2,47$; $p < .0005$, $r^2 = .43$, #3 ($F = 47.60$; $df = 2,47$; $p < .0005$; $r^2 = .68$) and #7 ($F = 4.42$; $df = 2,47$ $p < .05$; $r^2 = .14$). But for message #4, both middle and upper managers sent more responses than did workers ($F = 46.52$; df 2,47; $p < .001$; $r^2 = .67$). Upper management sent responses to more people than did the other two levels, but only for two Lo E and one Hi E message. A significant message effect ($F = 16.98$; $df = 6,270$; $p < .00$); $r^2 = .27$) and message-type interaction effect ($F = 3.77$; $df = 12,270$; $p < .001$; $r^2 = .06$); however suggested that message characteristics other than equivocality influenced the number of people to contact about a given message. The two factors that accounted for 72% of the variance were the individual messages and the equivocality dimension. Since the issues discussed in messages #3, #4, and #7, pertained to organization-wide concerns, it seemed reasonable to send responses to many organizational members. Upper managers, in particular, might feel compelled to disseminate information about these topics.

Analysis of Written Messages. Analysis of written messages demonstrated how individuals reduced, maintained, or increased equivocality. The 17 groups produced 134 written feedback responses which were coded into one of the three evaluation and one of the six equivocality management categories. Since the withhold judgment category had a frequency less than 10, it was eliminated from further analysis.

Neither category within the evaluation dimension showed significant differences among levels of the organization or between Hi and Lo E messages (Accepts; level, $F = .30$; $df = 2,13$; $p < .99$; equivocality, $F = 3.39$; $df = 1,13$; $p < .08$. Rejects; level, $F = 2.66$; $df = 2,13$; $p < .10$; equivocality, $F = .31$; $df = 1,13$; p .58. See Table 5 for power estimates). Subjects reacted favorably to the stimulus messages; only 22 of 134 were coded in the negative category and only 8 of the responses were neutral.

Significant effects, however, were observed for three of the six equivocality management categories. Organization level also influenced the way individuals responded to Hi and Lo E messages. Hi E messages were processed by adding a course of action to the original message ($F = 8.27$; $df = 1,13$; $p < .01$, $r^2 = .57$) while Lo E messages were accepted without modification ($F = 8.53$; $df = 1,13$; $p < .01$; $r^2 = .60$). An inspection of the mean frequencies for each message revealed that these patterns were consistent across the four Hi and the four Lo E messages.

The findings for the no modification category, however, were mediated by signficant interaction effects for organization level. Upper and middle managers accepted Lo E messages without changing message content more frequently than did workers and foreman ($F = 4.47$; $df = 2,13$; $p < .03$ $r^2 = .60$). Foremen and workers, in contrast, modified both the Hi and Lo E messages

by adding an interpretation to the original statement ($F = 6.49$; $df = 2,13$; $p < .01$; $r^2 = .76$). All three levels, then specialized in the way they processed equivocality. Lower levels constructed written responses that added an interpretation to the original message while upper and middle managers accepted Lo E messages without modifying message content.

Analysis of Group Interaction. The two coders classified 2260 acts from the audiotaped recordings into 13 categories--six for equivocality management, five for assembly rules, and two for socio-emotional comments. Results of interaction analysis generally paralleled findings for the written messages, with one major exception. Subjects added more course of action statements to discussions of Lo E as opposed to Hi E messages ($F = 6.29$; $df = 1,14$; $p < .03$; $r^2 = .41$). This finding, while a general trend for all subjects, was more characteristic of upper managers than of middle and lower levels ($F = 8.25$; $df = 2,14$; $p < .004$; $r^2 = .45$). Upper managers spent considerable message time on solutions and action steps while foremen and workers used significantly more interpretation statements than did managers ($F = 4.44$; $df = 2,14$; $p < .03$; $r^2 = .63$, see Table 6).

Only two of the five assembly rule categories yielded significant results--acceptability and relevance. Subjects relied on acceptability arguments for the Lo as opposed to the Hi E messages ($F = 5.79$; $df = 1,14$; $p < .03$; $r^2 = .48$). However, an inspection of frequency by individual message showed that 93% of the acceptability statements occurred during discussions of messages #3, #4, and #7--two Lo E and one Hi E message. These messages addressed such issues as overtime work schedules, 4-day work weeks, and company morale; topics that were conducive to acceptability controversies. The content of the message, then, seemed to guide the use of acceptability statements.

The relevance category also yielded a significant effect; upper managers used more relevance arguments for the Lo but not the Hi E messages. Foremen and workers, however, used more relevance statements during discussions of the Hi E but not the Lo E messages ($F = 4.61$; $df = 2,14$; $p < .02$; $r^2 = .45$). Although no particular message accounted for these differences, upper managers generated the highest number of relevance statements for message #3 and workers raised more relevance arguments for messages #5 and #8. Further investigation revealed that some groups felt these messages were irrelevant to their role in the organization; hence, the use of relevance as a criterion for processing messages appeared confounded with the relevance of message content for that particular group.

DISCUSSION

This investigation focused on the processing of ambiguous messages in organizations. Ambiguity emanated from the construction and interpretation of messages within a given context. In particular, group interaction aimed at organizing collective behavior facilitated the selection of interpretations and the processing of equivocal inputs. In this study individuals at all levels of the organization viewed Hi E messages as more ambiguous than Lo E messages. These responses were consistent for seven of the eight messages, but for message #6, individuals familiar with the details of the model (workers) perceived more equivocality than did managers ($W = 21.47$; $M = 13.50$). This finding suggested that informational distance between managers and workers yielded discrepancies in judgments of equivocality. In a larger organization these discrepancies might be more pronounced than they were in the current investigation.

Organizational members also processed Hi E messages differently than they did Lo E messages. Consistent with Weick's (1979) prediction, more assembly rules were used to process Lo E as opposed to Hi E messages. This pattern was also evident in the analysis of group interaction. Subjects generated a higher frequency of criteria (assembly rule categories 1-4) for Lo E than for Hi E messages (Lo = 983; Hi = 668; $t = 1.48$; $df = 30$; $p < .10$). But contrary to Weick's (1979) prediction, responses to Lo E messages were sent to more people than were responses to Hi E messages. Several factors might account for this effect. First, written feedback rather than the original Hi and Lo E messages were sent to organizational members. Since we did not determine the degree of equivocality embedded in written responses, groups might compose a Lo E response to a Hi E message, but it was unlikely that they would formulate Hi E responses to Lo E messages, particularly when group talk centered upon equivocality reduction. Hence, this explanation was not plausible.

A second explanation focused on the measurement of double interacts. Number of people, as noted earlier, was not a behavioral estimate of double interacts. Even though members expected a response to their written feedback, they acted upon the messages as if no adjustment was necessary. Workers as well as managers delegated messages to others and acted as if they had the final say in interpreting events; hence it was difficult to determine if the 'idea' of a double interact was operative in this study. A better estimate of communication cycles might be the number of double interacts produced during group discussions (Kreps, 1980), the length of talk time and silences, or the number of contributions produced by a group. Communication cycles might be linked to the speed of processing a message; Lo E inputs might be dispatched more quickly than would Hi E messages (Weick, 1979, p. 145). However, a post hoc analysis of the total number of contributions per message revealed no

significant differences for Hi and Lo E messages ($F = 2.74$; $df = 2, 14$; $p < .12$) or for level ($F = 2.63$, $df = 2,14$; $p < .11$). Moreover, the mean frequencies of total contributions were in the opposite direction. Members generated more contributions for the Lo than for the Hi E messages (Lo E = 190; Hi E = 127). This measure, though, was a gross estimate of communication cycles; future research should examine filled pause ratios, silence quotients, and contributions per minute as cycles influenced by the ambiguity of inputs (Siegman & Pope, 1972).

Overall management of equivocality was examined by comparing percentages on the combined categories of reduced, increased, or maintained equivocality for Hi and Lo E messages. Mean frequencies within these three types were computed and then percentages of total talk time were calculated. The written messages appeared equally distributed across the three types (see Table 7), but the majority of oral messages centered upon equivocality reduction (Lo = 59%, Hi = 48%). Increase in equivocality occurred primarily during discussions of Hi E messages, but as a whole individuals responded to both Hi and Lo E messages with efforts to reduce equivocality.

In this investigation organizational level also affected message processing. Upper managers were consistent with Weick's (1979) model in selecting fewer rules and more people to process Lo E messages than did individuals at the middle and lower levels. Middle and lower levels, in turn, selected more rules than upper management, especially for the Lo E condition. The observation that upper management sent feedback to more people than did workers confirmed research findings on the size of communication loops (Katz & Kahn, 1978). Specifically, top management set policies, formulated strategies, and communicated these choices to the organization (Anderson & Paine, 1975). Since maintaining an internal communication system is a primary function of

management (Barnard, 1938), the finding that upper managers sent messages to more people was consistent with managerial duties (Koehler, Anatol, Applbaum, 1976, p. 188). Moreover, this finding demonstrated a disproportionate size in the communication loops of managers as compared to workers. Top management sent messages # 2, 3, 4, and 7 to approximately everyone in the organization, yet they received feedback primarily from their immediate subordinates. Upper managers received only 35 of the 134 feedback messages and 12 of these were from middle managers. Middle managers received 72 or 54% of the feedback messages; hence the size of the communication loop for upper managers was greater for sending as opposed to receiving messages.

Analysis of written and oral responses revealed that organizational level influenced the management of equivocality. Upper and middle managers responded to equivocality by searching for actions while workers reacted to Hi and Lo E messages by adding interpretations to the original content. Moreover, lower levels were least likely to seek clarification of ambiguous messages. While this finding was not statistically significant, the mean frequencies were in the expected direction ($F = 2.99$; $df = 2,13$; $p < .08$; U = .25; M = .23; L = .06). These results corroborate Harvey & Boettger's (1971) finding that subordinates interpreted rather than clarified "double meaning" messages. Thus, members at different levels of the organization appeared to use different rules to assemble communication cycles. Organizational levels also differed in the use of relevance as a criterion for responding to messages. Upper managers employed more relevance issues in discussing Lo E messages while workers and foremen were more concerned about relevance matters in the processing of Hi E messages.

Moreover, the findings of this investigation have implications for future research. (1.) The definition of message ambiguity used in this study needs

further scale development and manipulation of situational uncertainty in message content. A key concern in constructing ambiguous messages is the salience of equivocality in deciding how to process meanings. Future research should concentrate on the content and the relevance of messages as factors that interact with equivocality. (2) Future studies should examine face-to-face messages, particularly ones that originate from workers to supervisors. (3) Future investigations should attempt to separate rules as criteria for processing messages from characteristics of messages. For example, feasibility-satisficing is a rule for deciding how to process a message, but relevance is both a criterion for processing and a characteristic of a message. (4) Additional research should examine the salience or strength of any one rule in determining the cycles for processing a message. The importance of a particular criterion or the priorities among a number of rules may be more critical than the total number of criteria. (5) Other studies might focus on the role of retention systems in the selection and processing of Hi and Lo E messages.

In addition to research considerations, this study has implications for communication practitioners in that it emphasizes process rather than clarity or perceptual distortion of messages. In particular, it demonstrates that organizational members process messages by selecting interpretations, by choosing rationale for acting upon messages, and by selecting communication cycles to channel these interpretations. Organizations should process highly equivocal information by increasing the number of plausible interpretations, by decreasing rules and regulations for handling the message, and by increasing the amount of interaction. But in many instances, the need to maintain control or to be knowledgeable about organizational events leads employees to reduce equivocality prematurely, by using a number of rules to restrict communication.

This pattern, in turn, is more effective for managing Lo and opposed to Hi equivocal information. Weick (1979) contends that the premature reduction of equivocality limits an organization's options and leads it into a state of atrophy.

Consistent with this recommendation, subjects in this study use more rules to respond to Lo E than to Hi E messages. Analysis of assembly rule categories confirm this finding, with the exception of the relevance statements made by middle and lower-level employees. In general, though, subjects employ few rule-governed statements in deciding how to process highly ambiguous information. But approximately half of the group talk centers on equivocality reduction, with workers and foremen adding interpretations to the original message and with managers initiating action steps to reduce ambiguity. Divergent approaches to the management of equivocality may trigger more controversy than does the presence of multiple meanings. In effect, responses to ambiguity may represent ways to control the situation; management controls through directives or action steps while workers control through making and exchanging interpretations of events. While these approaches may converge, both vie for the symbolic definition of organizational life.

This investigation employs multiple methods to examine the processing of equivocality. It contends that message ambiguity consists of structural and perceived equivocality within an interactional context. As a test of Weick's (1979) model, this research supports his predictions about assembly rules and demonstrates that organizational level impinges upon reactions to equivocal messages. Weick (1979) argues, "Most 'objects' in organizations consist of communications, meanings, images, myths, and interpretations, all of which offer considerable latitude for definition and self-validation" (p. 157). This latitude in definition suggests that the selection and processing of meaning is the key to understanding how organizations make sense of their activities and their environments.

NOTES

1. Weick (1979) makes a distinction between uncertainty and equivocality. Specifically, uncertainty connotes confusion of meaning while equivocality refers to duplicity of meaning. Ambiguity resembles equivocality in that an ambiguous cue "can be coordinated with two or more original events" (Weick, 1979, p. 182). In this study, ambiguity and equivocality are used interchangeably.

2. This approach to testing assembly rules relies upon the perceptions of participants rather than upon their rule-governed behaviors. Hence, people may rationalize their use of rules rather than describe the ones they actually used in selecting communication cycles.

3. The SIPA was not available in published form when this study was conducted, but the category system used in our study resembles two dimensions of this schema.

4. Copies of the correlagram and the table of correlation coefficients are available from the first author.

5. This simulation is a modified vresion of HI-FI Fireworks, a simulation described in the Instructor's Guide to Accompany Communicating and Organizing by Michael Pacanowsky with Richard V. Farace, Peter R. Monge, and Hamish M. Russell. Reading, Mass.: Addison Wesley, 1977.

6. The messages were designed to evoke multiple meanings through the use of abstract language, absence of course of action, and lack of specific

details. The use of terms like 'make products safer,' 'morale,' and 'overload' referred to multiple events and meanings. Also, message #6 exemplified Weick's (1979) notion of organizational puns; there were two ways that R-2 parts could be place parallel to and directly under R-1 components.

7. Division of subjects into levels of the organization reduced the cell sizes to 6, 12, and 30 for individual analyses and 2, 4, 11 for group data. These small cell sizes caution researchers not to generalize from this exploratory investigation.

8. Logarithmic transformations and subsequent statistical tests were performed to meet assumptions of homogeneity of variance and covariance and additivity of treatment effects. In repeated measures ANOVA heterogeneity of variances and nonlinearity of data produce spurious results. This transformation normalizes frequency distributions through a linear adjustment of the data (Winer, 1971). Kirk (1968) provides a procedure for selecting the appropriate transformation. This procedure was followed and the logarithmic transformation formula for (data + 1) $\log_{10}$ was selected. While some statisticians recommend the use of arc-sine transformations to normalize proportional data, we decided to use the raw proportions in this analysis. Recent studies which employ proportional data report no significant differences between raw and transformed proportions (Bauchner, Kaplan, & Miller, 1980; LaFrance, M., & Carmen, B. 1980).

9. r^2 calculations were based on Ferguson's (1976) discussion of ANOVAs as correlation ratios (see Ferguson, 1976, pp. 236-237; 286-288).

TABLE 1

PRETEST RATINGS OF THE EIGHT AMBIGUOUS MESSAGES

Message #	Lo Ambiguous Messages	Sum of Ratings	Mean Ratings
1	TCI, our customer, complains that our firework models are wobbly and unstable. Please push R-2 parts more firmly into the S-6 parts at the base of the model.	312	1.8
2	TCI, our customer, will accept a modification in the design of the firework model. Please substitute R-2 parts for R-4 components in the horizontal section of the nose unit. This modification should reduce the problems caused by a shortage of R-4 parts.	378	2.1
3	Three assembly plants in Chicago reported that productivity increased when work schedules shifted to a 10-hour per day, four-day work week. Please survey members of your group regarding their feelings about switching to a four-day work week.	344	1.9
4	Since firework sales doubled during the month of June, the Board of Directors requests that we increase production 20 units beyond our normal monthly quota. Please discuss the possibility of extending work schedules to evenings and weekends for the next three weeks. Hourly workers will be paid time-and-a-half for this overtime service. Salaried employees will be given a bonus for the three-week time period.	330	1.9

TABLE 1 cont'd.

Message #	Hi Ambiguous Messages	Sum of Ratings	Mean Ratings
5	The Safety and Regulations Division of the Consumer Products Division of the Federal Government issued a directive that firework companies need to make their products safer.	601	3.5
6	TCI purchased our firework model for $60. $10 was deducted because the R-2 components in the body of the model were placed parallel to and directly under the R-1 parts.	666	3.9
7	A significant number of employees complained that morale is at an all-time low. The Board of Directors wants the company to build a stronger sense of group togetherness.	562	3.3
8	The consultants hired by the management of Hi-Fli report that information overload is causing problems in the company.	600	3.7

TABLE 2

MEAN RATINGS FOR MESSAGE EVALUATION

	Message #	Mean for Each Message	Upper	Middle	Lower
Lo E	1	9.83	10.33	10.66	9.40
	2	10.10	12.17	10.00	9.73
	3	11.00	10.16	12.08	10.73
	4	12.72	11.33	12.92	12.93
	Mean	m = 11.03***	m = 11.00	m = 11.40	m = 10.70
Hi E	5	16.88	18.50	18.08	16.07
	6	19.67	13.50	18.25	21.47
	7	17.06	16.33	17.58	17.00
	8	21.08	18.67	22.17	21.13
	Mean	m = 18.23***	m = 16.75	m = 19.02	m = 18.92

***p < .0005

TABLE 3

MEAN FREQUENCIES FOR ASSEMBLY RULES

	Message #	Mean for Each Message	Upper	Middle	Lower
Lo E	1	6.91	3.83	7.91	7.13
	2	7.56	3.50**	8.33**	8.06**
	3	5.93	6.66	7.25	5.26
	4	8.12	6.83**	10.08**	7.60**
	Mean	m = 7.13***	m = 5.21*	m = 8.39*	m = 7.01*
Hi E	5	4.79	4.00	6.16	4.40
	6	5.77	6.83	7.00	5.06
	7	7.41	6.33	8.83	7.06
	8	4.58	2.67	4.67	4.93
	Mean	m = 5.64***	m = 4.96	m = 6.67	m = 5.36

*p < .05
**p < .001 to .01
***p < .0005

TABLE 4

MEAN FREQUENCIES FOR NUMBER OF PEOPLE

	Message #	Mean for Each Message	Upper	Middle	Lower
Lo E	1	4.89	8.17	3.67	4.73
	2	10.83	27.33***	11.33***	7.33***
	3	8.88	27.00***	6.91***	6.03***
	4	10.33	27.33**	14.83**	5.13**
	Mean	m = 8.74***	m = 22.46	m = 9.19	m = 5.81
Hi E	5	3.46	4.33	2.41	3.70
	6	5.17	5.33	5.67	4.93
	7	8.58	17.67*	5.00*	8.20*
	8	8.38	4.50	6.41	9.93
	Mean	m = 6.40***	m = 7.96	m = 4.87	m = 6.69

*p < .05
**p < .001 to .01
***p < .0005

TABLE 5

MEAN FREQUENCIES FOR WRITTEN MESSAGES[a]

Category	N	1-B[b]		Upper		Middle		Lower	
Dimension I: Evaluation	126	Level	Equiv	Lo E	Hi E	Lo E	Hi E	Lo E	Hi E
1. Accepts	104	.10	.54	4.25	3.75	4.00	3.75	4.15	3.85
2. Rejects	22	.58	.10	.36	.25	.53	.25	1.51	1.28
Dimension II: Equivocality Management									
Reduction									
1. Interpretation	22	.85	.93	.25	.25	.50	.25	.75	1.91*
2. Course of Action	31	.98	.10	.91	3.25*	.91	1.58	.95	.95
3. Combined interpretation with course of action	11	.88	.70	.25	.25	.25	.75	.95	.48
Maintenance									
4. Accepts-without modification	33	.10	.55	2.41**	.25	1.91**	.58	.95**	1.15
5. Clarification	16	.76	.21	1.41	1.25	1.08	1.33	.25	.75
Increases									
6. Redirects Message	21	.10	.95	.25	.25	.58	1.25	.95	.95

*p < .01
**p < .05

[a] .25 was added to the mean frequency of all cells.

[b] Power was calculated by using the mean differences and SD found in this study in accordance with Kirk's (1968) formula for power functions of multi-factor ANOVA. It was assumed that enough power for a non-repeated measure design would yield additional power for repeated measures. Power estimates were set at .80, alpha at .05.

TABLE 6

MEAN PROPORTION OF MESSAGE FREQUENCIES FOR GROUP INTERACTIONS

Category	N	1-B		Upper		Middle		Lower	
Dimension II: Equivocality Management	2260	Level	Equiv	Lo E	Hi E	Lo E	Hi E	Lo E	Hi E
Reduction									
1. Interpretation	804	.45	.13	.198*	.093*	.158*	.152*	.266*	.223*
2. Course of action	257	.98	.54	.178**	.079**	.056**	.043**	.044**	.036**
3. Combined interpretation with course of action	175	.23	.18	.032	.051	.049	.037	.050	.036
Maintenance									
4. Accepts-rejects without modification	176	.15	.60	.058	.038	.036	.050	.037	.017
5. Clarification	156	.95	.10	.056	.038	.045	.041	.021	.024
Increase									
6. Redirects message	187	.44	.21	.039	.013	.038	.086	.029	.049
Socio-Emotional									
7. Digression	303	.95	.65	.060	.024	.069	.047	.041	.039
8. Deliberation on mechanics of experiment	202	.89	.94	.002	.036	.042	.043	.033	.047

TABLE 6 cont'd.

Category	N	1-B		Upper		Middle		Lower	
Dimension III: Assembly Rules		Level	Equiv	Lo E	Hi E	Lo E	Hi E	Lo E	Hi E
1. Productivity, Company Image, Efficiency and Quality	166	.68	.50	.047	.004	.036	.023	.086	.027
2. Relevance	613	.64	.38	.132**	.049**	.113**	.148**	.096**	.164**
3. Acceptability, Amount of satisfaction	395	.98	.96	.168*	.070*	.075*	.041*	.135*	.080*
4. Feasibility-Satisficing	474	.31	.24	.170	.082	.172	.136	.101	.067
5. No Rationale	609	.10	.50	.106	.166	.116	.143	.104	.136

*p < .05
**p < .02

TABLE 7

PERCENTAGE OF EQUIVOCALITY MANAGEMENT FREQUENCIES FOR WRITTEN AND INTERACTION MESSAGES

Category	Written		Group Interaction		Combined Oral & Written	
	Lo E	Hi E	Lo E	Hi E	Lo E	Hi E
	[a]n=32.3	n=33.7	n=406	n=360	n=436	n=394*
Reduce	.34	.32	.59	.48	.56	.47
Increase	.28	.36	.18	.31	.19	.38
Maintain	.38	.32	.23	.21	.24	.22

[a]n represents the mean frequencies of the number of categories included in each of the equivocality management types.

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