

AD-A061 644

DUKE UNIV DURHAM N C GRADUATE SCHOOL OF BUSINESS ADM--ETC F/6 5/10
THE EFFECT OF QUANTITY AND CONTENT OF COMMUNICATIONS ON THE NOM--ETC(U)
NOV 78 A Y LEWIN, S S LAYMAN

N00014-76-C-0007

UNCLASSIFIED

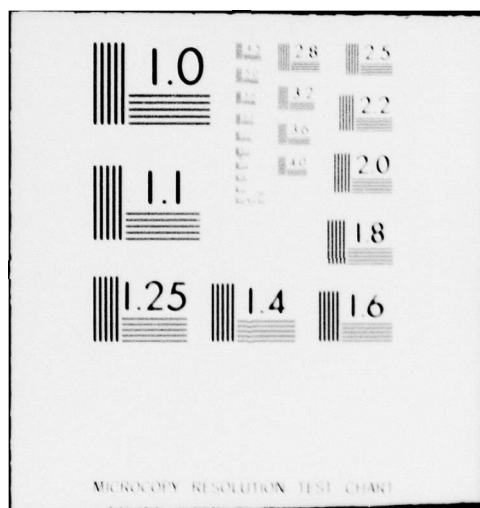
TR-8

NL

1 of 1
AD
A061 644



END
DATE
FILMED
2-79
DDC



SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

LEVEL 1

7

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS
BEFORE COMPLETING FORM

1. REPORT NUMBER Technical Report No. 8		2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Effect of Quantity and Content of Communications of the Nominations on the Nominations of Emergent Leaders		5. TYPE OF REPORT & PERIOD COVERED Progress	
7. AUTHOR(s) Arie Y. Lewin and Shelley S. Layman		6. PERFORMING ORG. REPORT NUMBER	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Graduate School of Business Administration Duke University, Durham, North Carolina		8. CONTRACT OR GRANT NUMBER(s) N00014-76-C-007	
11. CONTROLLING OFFICE NAME AND ADDRESS Organizational Effectiveness Research Office of Naval Research Arlington, Virginia 22217		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N170-805	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE November 1, 1978	
		13. NUMBER OF PAGES 12	
		15. SECURITY CLASS. (of this report) Unclassified	
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report) Distribution of this document is unlimited. Reproduction in whole or in part is permitted for any purpose of the United States Government.			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)			
18. SUPPLEMENTARY NOTES			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Leadership Verbal Communication Non-Verbal Communication Information Processing			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This research note investigates the effect of the quantity and content of communications on the nominations of emergent leaders in ad hoc groups. Peer ratings on overall leadership were obtained from interacting group members involved in a management simulation. In addition, each subject was asked to verbalize his thoughts (think aloud) as he or she ranked each group member on the sociometric "Who shows the best overall leadership qualities?" These thought processes (protocols) were content analyzed and an information processing (IP) model for the sociometric was formulated. Mutual Influence (MI)			

DDC
RECEIVED
NOV 29 1978
RECEIVED

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-014-66011

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

AD A061644

DDC FILE COPY

and Social-Directive (S-D) behaviors composed the IP model. Group interactions were scored and members were ranked according to the number of MI and S-D behaviors in which they engaged. Subjects were also ranked according to the quantity of words spoken. These two sets of rankings were then statistically compared to the actual peer rankings on overall leadership qualities. Results indicate that the content of communications (verbal and non-verbal) is more important in making leadership nominations than the quantity of verbal communications.

ACCESSION FOR	
DTIS	Write Section <input checked="" type="checkbox"/>
DDG	DTI Section <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
JUSTIFICATION	
BY	
DISTRIBUTION/AVAILABILITY CODES	
Dist.	AVAIL. And/or SPECIAL
A	.

⑥ THE EFFECT OF QUANTITY AND CONTENT
OF
COMMUNICATIONS
ON THE
NOMINATIONS OF EMERGENT LEADERS

⑮ N00014-76-2-0007

⑫ 15 P

⑪ 1 Nov 78

⑩ Arie Y. Lewin and Shelley S. Layman
Graduate School of Business Administration
Duke University

⑭ TR-8

⑨ Technical rept's

DDC
RECEIVED
NOV 29 1978
D

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

78 11 13 119
409 684

ABSTRACT

This research note investigates the effect of the quantity and content of communications on the nominations of emergent leaders in ad hoc groups. Peer ratings on overall leadership were obtained from interacting group members involved in a management simulation. In, addition, each subject was asked to verbalize his thoughts (think aloud) as he or she ranked each group member on the sociometric "Who shows the best overall leadership qualities?" These thought processes (protocols) were content analyzed and an information processing (IP) model for the sociometric was formulated. Mutual Influence (MI) and Social-Directive (S-D) behaviors composed the IP model. Group interactions were scored and members were ranked according to the number of MI and S-D behaviors in which they engaged. Subjects were also ranked according to the quantity of words spoken. These two sets of rankings were then statistically compared to the actual peer rankings on overall leadership qualities. Results indicate that the content of communications (verbal and non-verbal) is more important in making leadership nominations than the quantity of verbal communications.

Introduction. A number of studies have supported the hypothesis that the group member who emerges as the leader is that person who talks the most, independent of the content of his/her verbalizations. The quantity of communication is typically measured two ways, the time span of talking is monitored (presumably related to the number of words spoken), and statements are scored and summed following Bales Interaction Analysis (1950).

Bass (1949) obtained a high correlation between the time an individual spends talking in a leaderless group discussion and his subsequent status as a leader. The rankings obtained from subjects in the Bass study, however, were based on various behaviors associated with leadership, e.g., influence, interest, organization, and not on a direct assessment of "leadership". Norfleet (1948) and Riecken (1958) found that productivity ratings and influence, respectively, were positively correlated with high interaction rates; however, ratings on leadership were not obtained. Similarly, Regula and Julian (1973) found that talkativeness, or the relative frequency of contributing to task interaction, was associated with perceptions of ability, creativity and influence, but its relationship to leadership behavior was not investigated. Borgatta and Bales (1956) examined the relationship between group members' high leadership ratings and high interaction - initiation rates. They "tentatively" concluded that the two were positively associated.

More recently, Sorrentino and Boutillier (1975) studied the relationship between quantity and quality of verbal interaction on perceived leadership ability. Quantity was scored according to the number of statements expressed, while quality was held to

be synonymous, by the researchers, with the correct number of solutions to a problem. The four-man groups in the Sorrentino and Boutillier (1975) study did not interact face-to-face. The two variables were systematically varied in each group situation (e.g. High Quantity - Low Quality, etc.). Their results indicate that while quality of verbal interaction was found to predict perceived differences on such variables as competence, influence, and contribution to the group's goal, only quantity of verbal communication predicted perceived differences in leadership ability ratings.

Though such research is supportive of the importance of verbal interaction in small groups, it appears that quantity of communication alone may not be an adequate predictor of leadership. For example, only 11 of Slater's (1955) 20 discussion groups resulted in a positive correlation between high participative [Bales, (1950)] interaction scores and leadership nominations by group members.

Kirscht, Lodahl and Haire (1959) had their group members select one person to act as a "representative" of the group. They found that variables such as, gives suggestions, asks for opinions, summarizes and integrates, were more important in this selection process than quantity of participation as measured by the time spent talking. Similarly, Carter, Haythorn, Shriver and Lanzetta (1951) found high leadership ratings to be associated with a person's ability to analyze the situation and initiate the required action.

Stein, Geis, and Damarin (1973) studied the accuracy in perceiving emergent task and socioemotional leadership in small

groups. Their results imply that participation (time spent talking) was an extremely important cue in the perception of leader behavior. When perception of participation was statistically controlled, however, the accuracy means for coordination, influence and harmony proved to be significant at the .001 level. This lead Stein, et.al. (1973) to conclude...."the fact that these means remained significant implies that cues other than the gross amount of participation were used in perceiving...[leadership]...functions." (p.84).

Statement of the problem. The reviewed research clearly highlights the contradictory nature of the findings regarding the importance of participation, or the quantity of verbal communication, on perceived leadership ability. This research note presents data from a study of peer nominations (Lewin & Layman, in press) which readily lends itself to investigating the relationship between leadership nominations and the content and quantity of communications.

Procedure. The subjects were paid volunteer undergraduate students attending summer school at Duke University. They were randomly designated into ten seven-person teams participating in a management simulation. Each simulation consisted of six phases:

- (1) Subjects received an orientation - they were to assume the role of a management consulting team, meeting in the absence of their project team leader, to prepare preliminary recommendations to a hypothetical company as described in a case;
- (2) case material about the company was distributed to each subject and read individually;
- (3) the case was jointly discussed and analyzed by the group to arrive at the recommendations (this phase was videotaped);
- (4) subjects viewed themselves on videotape
- 5) a peer evaluation

questionnaire was completed. (Subjects were to exclude themselves and rank the members in their group on various sociometrics, including "Who has the best overall leadership qualities?"); (6) during a private conference each subject was asked to provide a protocol, that is, to "think aloud" (to verbalize his/her thoughts) as he ranked his group members on a sociometric which was omitted from his or her questionnaire.

Analysis of Results. The data for this study consists of the following: (1) actual peer ratings from each group member; (2) the quantity of each subject's verbal communications (the number of words spoke determined from a transcript of the videotaped group discussions and (3) the parameters of the information processing (IP) model for the sociometric question "Who shows the best overall leadership qualities?" as indicated from the protocol analyses. (The empirical derivation of this model and models of other leadership sociometrics are further discussed in Lewin and Layman, in press).

The model for the above sociometric was composed of two primary factors: Mutual Influence (MI) and Social - Directive (S-D) behaviors. Mutual Influence as identified by Lewin and Layman (in press) in terms of the following behaviors: a give and take exchange and having the ability to listen. The following descriptors from the protocols (transcripts of the subjects' verbalized thought process) illustrate this parameter: "can expound on my ideas", "we both contribute equally", "we agreed as well as disagreed with each other's views", "was willing to listen and wouldn't dominate or restrict me from adding my side", "doesn't

interrupt", is willing to change his opinions", etc. This parameter was scored based on a content analysis of the videotaped group interactions. The Mutual Influence score is composed of a count of the verbal agreements, disagreements, and statements which build on previous communications.

The Social-Directive factor characterizes the individual who organizes and gives direction to the group, and accomplishes this in a socially acceptable manner. A person ranking high on this dimension organized the group and structures its problem solving process, and at the same time is sensitive to the other group members. This is illustrated in the following descriptors extracted from the protocols: "initiates the discussion", "tries to get responses from other people", "brings group back on track", "gives the group structure and assigns various tasks", "pushes over ideas in a pleasant way", "able to look at both sides and reach a conclusion", etc. This parameter was scored based on a count of the verbal directive communications (e.g. keeps the group on track, categorizes and summarizes information, takes a comprehensive view of the situation etc.), and a score for nonverbal listening (e.g. eye contact, head nodding, etc). Thus the structure of the IP model assumes that subjects combine information from both verbal and nonverbal communications.

The data also lends itself for a direct testing of the importance of the quantity of participation on emergent leadership rankings. The complete record of the verbal transactions -- the number of words spoken, time length of the verbalizations, the content and order of communications -- allowed the relationship between the quantity of verbal communications and the rankings

quantity of verbal communications and the rankings on all sociometrics to be tested. Specifically, the quantity of verbal interaction (QVC) was measured by the number of words spoken.

Subjects in each group were ranked from first to last according to their QVC. A comparative frequency analysis was then calculated of the deviations of these rankings from the actual peer rankings for the sociometric "Who shows the best overall leadership qualities?" That is, the frequency was calculated for which there was a perfect match between the rankings based on the number of words spoken and the actual peer ranks, over all groups, where the QVC ranks were off by one adjacent rank, by two ranks, etc. The lower the overall deviations, the greater is the predictive ability. Table 1 presents the rank deviations for the QVC rankings. In addition, the same calculations were made for the IP model for this sociometric question.

Insert Table 1 About Here

Another means for comparing the predictive ability of content versus the quantity of communication is to calculate the Spearman rank correlations between the actual peer rankings and the IP model predictions and the rankings based on the QVC scores. Table 2 presents these r_s scores. Both forms of statistical analysis indicate that the information processing model correlations are superior to those obtained from the QVC score alone.

Insert Table 2 About Here

Discussion. The finding that the quantity of participation, as measured by the number of words spoken, was not a good predictor of who would rank highest on overall leadership ability is not surprising actually since quantity of communication was not expressed in the subjects' protocols as a primary factor used in judging overall leadership abilities. However, the absence of verbal communication (low participation in the group discussion) was often cited in the protocols as the reason for ranking individuals lowest on overall leadership. And quantity of verbalizations, did appear to be significant in rankings on other sociometrics (see Lewin & Layman, in press). For example, QVC scores combined with S-D scores proved to be the best predictors of peer rankings for the sociometric "Who is pulling most for the group?" and QVC scores alone provided the highest rank correlations for the sociometric "Who shows the most ability to think critically and analytically?"

Our findings do not necessarily conflict with other researchers who support the importance of quantity of verbalizations in leadership nominations, differing results may be due to methodological factors. Sorrentino and Boutillier (1975) for example, prevented their subjects from face-to-face interaction which clearly restricted the subjects from processing all nonverbal information. Further, their measure of quality of verbalization (the number of correct solutions) most likely limited the information which their subjects may have actually used when making leadership judgements. Thus the Sorrentino and Boutillier (1975) findings

may be bound by their methodology.

Stein (1975) found empirical evidence to support the importance of nonverbal communication in the identification of emergent leaders. Subject/observers were provided a record of target group meetings containing only verbal communications, only nonverbal communications, and both types of behaviors. Subjects were accurate in identifying emergent leadership hierarchies on four leadership dimensions (harmony, liking, coordination and participation). "The data suggests that the two typed of information are complementary and possibly that one is needed to clarify the meaning of the other." (Stien 1975: 131). Furthermore, Stein (1975) found that both types of communication provided cues of group members' leadership status which were independent of members relative participation rates (seconds spent talking).

Riecken (1958) reports evidence that unless a group member has a high participation rate in the early stages of the group discussion, other members will not attend to him even if he comes up with an "elegant solution" to the group's task. It is interesting to note that two of the groups in the Lewin and Layman (in press) study did not support this notion. In both cases a member with a considerably low overall rate of participation was ranked high on leadership ability because of his opinions or suggestions late in the discussion concerning the group's task.

In general, we may conclude that the findings from this study lend further empirical support to the importance of the content of communication in making emergent leadership nominations.

REFERENCES

- Bales, R. F. Interaction Process Analysis. Cambridge, Mass: Addison-Wesley, 1950.
- Bass, B. M. An analysis of the Leaderless Group Discussion. Journal of Applied Psychology. 1949, 33, 527 - 533.
- Borgatta, E. F. & Bales, R. F. Sociometric Status Patterns and Characteristics of Interaction. Journal of Social Psychology. 1956, 43, 289 - 297.
- Carter, L.; Haythorn, W.; Shriver, B.; & Lanzetta, J. The Behavior of Leaders and Other Group Members. Journal of Abnormal and Social Psychology. 1951, 46, 589 - 595.
- Kirscht, J. P.; Lodahl, T. M. & Haire, M. Some Factors in the Selection of Leaders by Members of Small Groups. Journal of Abnormal and Social Psychology. 1959, 58, 406 - 408.
- Lewin, A. Y. & Layman, S. S. Information Processing Models of Peer Nominations. Personnel Psychology, forthcoming.
- Norflert, B. Interpersonal Relations and Group Productivity. Journal of Social Issues. 1948, 4, 66 - 69.
- Regula, C. R. & Julian, J. W. The Impact of Quality and Frequency of Task Contributions on Percieved Ability. Journal of Social Psychology. 1973, 89, 115 - 122.
- Riecken, H. W. The Effect of Talkativeness on Ability to Influence Group Solutions of Problems. Sociometry. 1958, 21, 309 - 321.
- Slater, P. Role differentiation in Small Groups. American Sociological Review. 1955, 20, 300 - 310.
- Sorrentino, R. M. & Boutillier, R. G. The Effect of Quantity and Quality of Verbal Interaction on Ratings of Leadership Ability. Journal of Experimental and Social Psychology. 1975, 11, 403 - 411.
- Stein, R. T.; Geis, F. L. & Damarin, F. Perception of Emergent Leadership Hierarchies in Task Groups. Journal of Personality and Social Psychology. 1973, 28, 77 - 87.

Table 1

Cumulative Frequency of Rank Deviations of the QVC and Model Predictions from the Actual Peer Rankings.

Who shows the best overall leadership qualities?	Rank Deviations					$\sum d_i^2$
	0-.5	1-1.5	2-2.5	3-3.5	4	
QVC	21	23	9	4	3	156.0
Model	29	26	2	2	1	77.5

Table 2

Spearman Rank Correlations between Actual Peer Rankings and Those based upon the QVC and Model Predictions

Sociometric and Models

Groups +

Who shows the best overall leadership qualities?

	1	2	3	4	6 ^a	7	8	9 ^b	10
QVC	.536	.420	.714*	.964**	.800	.741*	.455	.571	.670
Model	.821	.634	.902**	.902**	.900*	.795*	.929*	.771	.759*

$\bar{a}_n = s$

$\bar{b}_n = 6$

$*p \geq .05$

$**p \geq .01$

+ Video tape audio did not record precluding analysis of Group 5.